ENGINEERING NEWS-RECORD

FEB. 18, 1960

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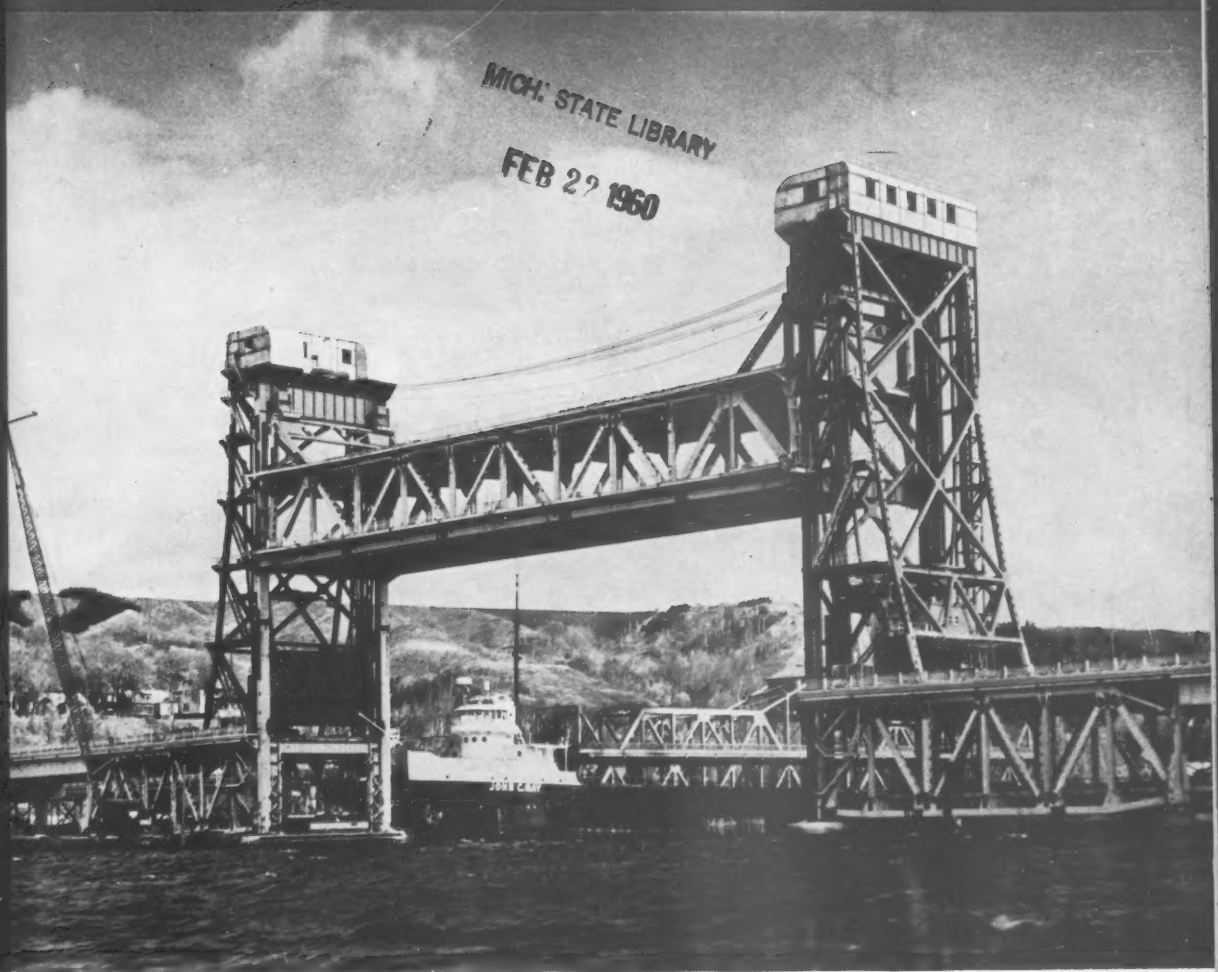

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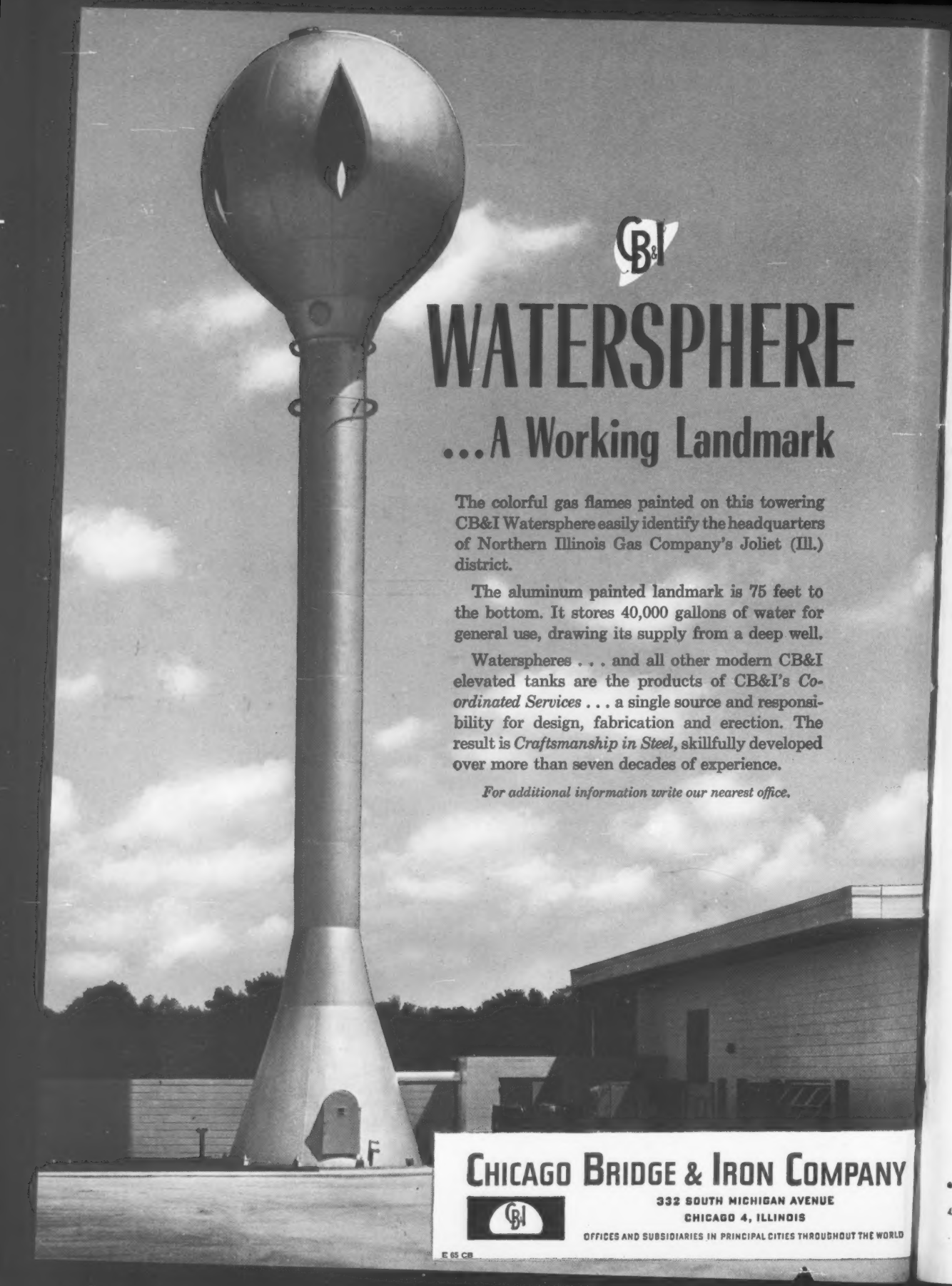
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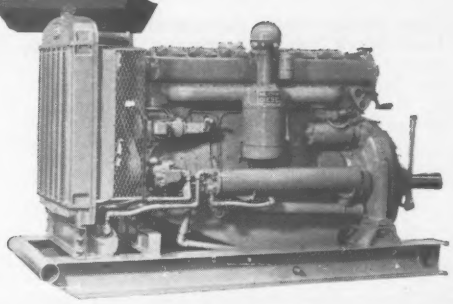
Two letters to remember in diesel engines and generator sets...

THE MP SERIES

MURPHY DIESELS



Here's the **MP** *Series Line-up*

MP SERIES ENGINES AND POWER UNITS—105 HP to 320 HP, 1200 and 1400 RPM.

MP SERIES DUAL FUEL ENGINES— also available.

MP SERIES GENERATOR SETS—60 KW to 188 KW.

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MP SERIES MARINE ENGINES AND AUXILIARIES—105 HP to 315 HP.

The 48-page booklet entitled "Before You Power a Job . . ." gives detailed information on MP Series Murphy Diesels. Ask your Murphy Diesel Dealer for a copy, or write direct. There's no obligation.

Deliver More Power Into the Job to Make More Profit for You

The power put into the job—not the power on the job, is the power that pays off for you. Engine reaction to load changes and speed changes determines the power that actually goes into the job. Only an engine with high rising torque can put more power into the job when needed.

MP Series Murphy Diesel engines are designed and built to deliver More Power into the job—the kind of *usable, hard-working power* you need. With high rising torque, they have the ability to take hold of a load and really hang on. This helps keep your equipment at the right operating speed for efficient production and More Profit. And remember, each day's production is determined by the *total power* put into the job that day.

To put MP Series Murphy power in your job, put Murphys on your job. You'll see the difference in your profits. Ask your Murphy Diesel Dealer for full information on the MP Series today.

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MURPHY DIESEL COMPANY

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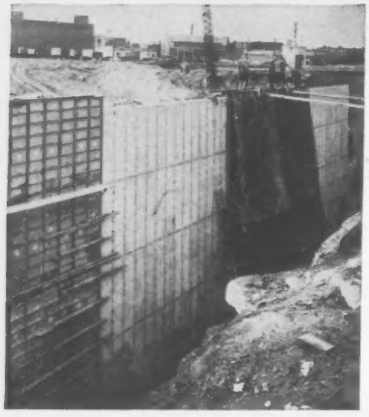
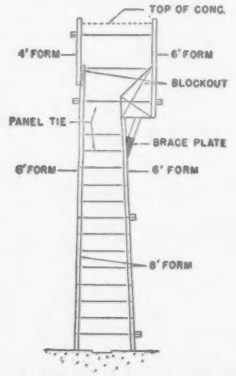
Battered Walls



Symons Forms on St. Louis Expressway

. . . Form Double Battered Walls 12" at Top, 3' at Base

On the downtown phase of the St. Louis Mark Twain Expressway, contractor R. B. Potashnick & J. S. Alberici Construction Company used 8,000 sq. ft. of Wood-Ply and 20,000 sq. ft. of Symons Steel-Ply Forms.



Job called for retaining walls, many of them double battered so that forms were angled to give 12" top thickness and up to 3' thickness at base. Heights varied from 4' to 34'. In addition, the forms were used to pour footings, abutments, piers and beams. Contractor obtained 30 re-uses.

Symons Forms may be rented with purchase option. Additional information on how to use Symons Forms for *battered walls* sent on request.

Symons

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EIGHTY-SIXTH YEAR OF PUBLICATION

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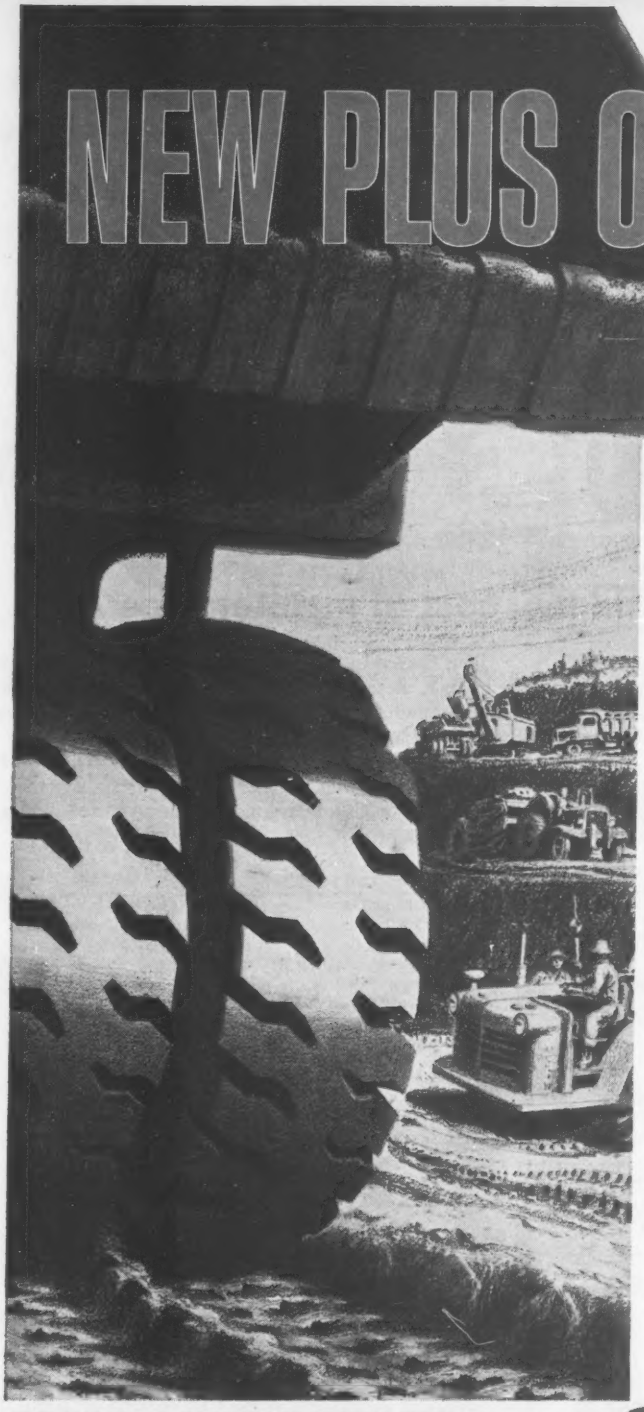
NEW PLUS ON PROFIT

Great new Goodyear tread cuts tire costs!



ON NEW SUPER ROAD LUG—a tougher tread utilizing advanced super-toughening agents mated to the toughest body known! This recently perfected tread compound matches the ruggedness of 3-T (nylon or rayon) Processed Cord! Result: an outstanding example of Goodyear's *toughest tires on earth!*

Now longer wear can reduce tire costs to build your profit. The bigger the job, the more you'll save with SUPER ROAD LUG on your wheels.

You'll find it keeping construction jobs going full blast, with its super traction rolling heavy equipment over the roughest ground, up the steepest grades and over smooth highways alike.

And new SUPER ROAD LUG takes the aggravated flexing caused by huge loads jouncing over rough terrain—thanks to its tough body built with 3-T (nylon or rayon) Processed Cord. This famous cord, triple-tempered by the exclusive Goodyear process involving Tension, Temperature and Time, has matchless strength and stamina.

Get onto the new performance and savings you'll have with this new super-tough SUPER ROAD LUG. Call your Goodyear dealer—or write Goodyear, Truck Tire Dept., Akron 16, Ohio.

THE WORLD'S TOUGHEST TRUCK TIRES BY

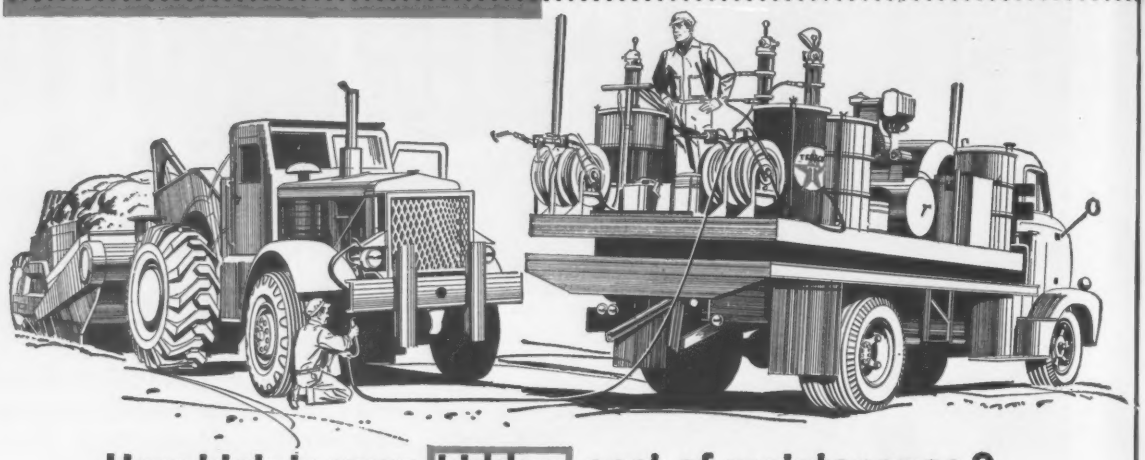
GOODYEAR

Road Lug —T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

LUBE LOGIC

Six tips to

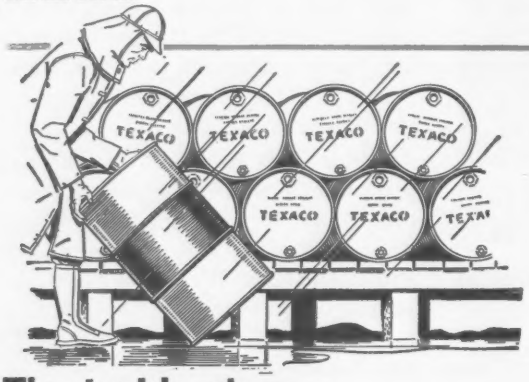


How high is your hidden cost of maintenance?

You may not realize how many extra maintenance dollars you spend when you keep many different lubricants on hand. (Six are often all you need to cover all major maintenance.) You pay extra for inventory. You pay extra for storage and handling. It costs you more in paperwork to order. And you'll have to figure the wasted cost of equipment parts and downtime if misapplication should occur.

The Texaco Lubrication Plan helps you reduce or even eliminate these hidden costs. That's because it provides the minimum number of *proven* multi-purpose and special lubricants, tailored to your job requirements.

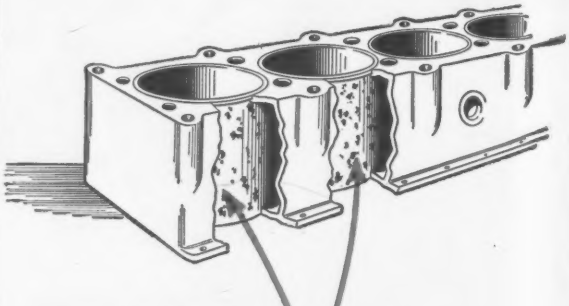
You'll do yourself a favor when you check with a Texaco Lubrication Engineer. He'll carefully plan your lubrication needs—then follow them up to see that your lubrication problems are taken care of fast.



The inside story on outside storage

You're short-changing yourself if you skip these simple precautions: drums stored outdoors should be placed on their sides. When stored on end, expansion and contraction through temperature changes can suck in rain water that collects on top of the drum.

Want to warm up lubricants that have become stiff from cold? *Don't* heat them with an open flame. You might melt the sealing compounds, and the drum will leak. You might also damage the product with too much heat in one spot. Put the drum indoors for a while before using.



Here's how to handle cylinder cavitation erosion

High pressure cooling systems in use in most supercharged diesels are subject to coolant aeration. This aeration can cause cavitation, leading to serious cylinder liner corrosion-erosion, unless a rust preventive is added to the water. A good antifreeze (like Texaco PT antifreeze) will do the job in winter—but in summer a 1% to 2% solution of Texaco Soluble Oil C will do a fine job. (Remember to flush out before you add antifreeze again.)

cut maintenance costs

OIL GAUGES SPEAK A LANGUAGE ALL THEIR OWN

Look to your oil gauge pressure for clues to a variety of potential engine ailments. For example:

LOW OR NONE

1. Oil pump pickup stuck high.

LOW

1. Clogged oil pump screen.
2. Excessive main, con-rod, camshaft or rocker-arm bearing clearances.
3. Clogged full-low filter, if by-pass isn't working.
4. Excessive dilution of oil with fuel.
5. Enlarged squirt holes.
6. Loose connections or cracks in oil line.

LOW OR ERRATIC

1. Faulty oil pump.
2. Restriction in oil pan, or oil too viscous to keep oil pump intake supplied.

LOW OR HIGH

1. Faulty gauge.
2. Ineffective oil cooler depending on type, may keep oil too cold or provide insufficient cooling.

HIGH

1. Oil with viscosity too high for climate.
2. Sludge and contamination in the oil.
3. Clogged oil passages on the pressure side.

HIGH, LOW OR ERRATIC

1. Improper setting or failure of pressure relief valve.

ERRATIC, LOW, THEN NONE

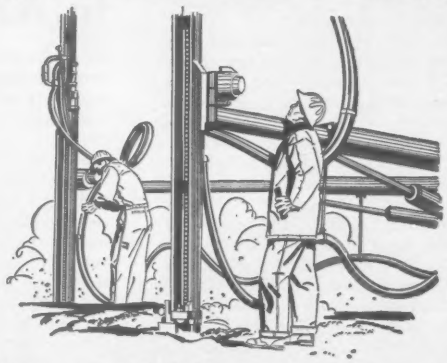
1. Crankcase oil level just at or below oil pump pickup.

NO MOVEMENT OR DELAYED ACTION

1. Clogged line to gauge.

Don't let engines foul up!

If the fuel injector on a diesel drifts off or "dribbles," incompletely burned fuel will contaminate the crankcase. The result will be plenty of smoke—and probably engine trouble. The injector should be fixed immediately—but if it can't be, start shortening drain periods to remove the damaging oil-fuel mixture. Also, use an oil with full detergent and dispersion properties to keep other undesirable products out of the engine.



New product for rock drill couplings

Actually, it's an old friend, Marfak Heavy Duty #2, in a new application. According to the raves from customers who've tried it, the lubricant works better on rock drill couplings than anything they've ever used.

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Every month or so we'll bring you a batch of "sleepers"—little angles, so easy to overlook, where big savings in time and money can be made. But month in, month out, your local Texaco Lubrication Engineer is the best source of money-saving lubrication ideas. Don't forget that "Lubrication is a major factor in cost control." Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

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In Defense of Teacher-Consultants

SIR—The letter by C. W. Britzius (ENR Jan. 14, 1960, p. 8) indicates the major cause of estrangement among the several groups within the engineering profession: lack of sympathetic respect or understanding.

Mr. Britzius has apparently based his discussion on two assumptions:

1. That a teacher's salary is always considered to be full compensation for his services.

2. That university teaching provides full time employment.

My professional contacts with four major universities indicate that the above are not based on fact.

It is generally agreed in university circles that salary does not retain a good teacher, for if he is a good teacher his talents could be applied in other fields for a greater monetary reward. The salary is then considered supplemented by other values, such as the prestige of the institution, and by other concessions, such as the right to use laboratory testing equipment (not materials or personnel) for private study and professional advancement.

Concerning assumption number two, engineering teaching is, with few exceptions, a nine months' job. Teachers who are fortunate enough to attain administrative or research responsibilities may be on the payroll for 12 months. Others must seek supplemental income.

This supplemental income is generally earned in one of three ways:

1. Working directly with industrial or professional organizations.

2. Working in consultant capacity.

3. Doing research which is obtained on a contractual basis by the institution with government or industry.

The first form of supplemental income is generally not too satisfactory. Usually it requires that a teacher and his family move a considerable distance. Three months is not long enough to learn a new job and give just returns.

Consulting is a pursuit for which a professor is generally well qualified and which fits in well with the responsibilities of his other part time job.

I agree with Mr. Britzius that consulting, whether done by college professors or other engineers, should command a somewhat standard compensation. However, the teacher's position in a public institution requires that he will be asked to render some service gratis under pressure from the university administration in the name of public relations, and under the demands of the public itself. The balancing of the just fees and the free services average out to a lower compensation, which is perhaps what is referred to in our colleague's letter.

The third means of supplemental income mentioned above is in little competition with non-university organizations. Private concerns are for the most part unwilling to collect the qualified personnel or invest in the equipment necessary to conduct the type of research which does not appear to have an immediate monetary value.

ROBERT T. LORENZEN
Assistant Professor,
Agricultural Engineering
Cornell University
Ithaca, N. Y.

▶I read your editorials and Reader Comments about conflict of interest—professors, federal, state, county, municipal and utility company engineers practicing in competition with private engineering enterprise—and I wonder if anyone ever considered the fact that many of these same men are practicing land surveying the same way.

My offices in New Jersey and Florida have been responsible for the design of thousands of lots that contain the homes of as many families. All of these lots had to have roads, drainage and sometimes complete sanitary sewer plants designed for their service.

We have to compete in price with the federal, state, county, municipal and utility company surveyors-engineers and college professors who can use their employer's men and equipment to under-cut us.

Planning consultants sit on the planning board with a flat map in front of them and tell you that this road should curve here instead of there because . . . well, just because. The fact that they have never been on the site and can't read a topographic map never enters the picture.

So engineers, do not feel too badly, we surveyors have our problems too.

ROBERT C. EDWARDS, *President*
Robert C. Edwards Associates Inc.
Land Surveyors
Morristown, N. J.

In Arctic: Nickel Adds Ductility

SIR—The descriptions design and construction methods used for the DEW and BMEWS projects were extremely interesting. (ENR Dec. 24, 1959, p. 26)

The arctic poses special problems for materials of construction as well, and your readers might like to have some additional information concerning the steels in the large BMEWS surveillance antennae. While the nickel steels selected for the truss members and raker supports do provide somewhat better strength and corrosion resistance than ordinary structural steels, they were chosen mainly to reduce the chance that the structures would fail in a brittle manner under the severe conditions of exposure.

A great deal of study has been given to failures of ships, bridges, pipe lines, storage tanks, penstocks and large rotating machine components in which rupture has occurred in a brittle manner even though the materials have shown ample evidence of ductility in tensile tests. The circumstances of such brittle failures have combined various degrees of static and dynamic loading, the presence of stress concentrations, and a low temperature effect.

In studying the mechanism of fracture, steels have been found to undergo a transition from ductile to brittle behavior under several combinations of these factors. Composition, manufacturing practice and treatment all affect this transition behavior. Alloying with nickel is an important way of improving a steel's resistance to brittle fracture, lowering its transition temperature and permitting the design of structures that will operate safely under more severe service conditions.

Both 2¼ and 3½% nickel steels, ASTM specification 203 B and D have, been used in the BMEWS antennae. These steels have a long history of successful performance under the ASME pressure vessel code vessels operating at sub-zero temperatures. For such use they have been required to meet ASTM A-300, which specifies that 2¼% nickel steel should have a 15-ft-lb transition temperature of minus 75 deg F in the keyhole charpy impact test, while 3½% nickel steel should meet the same requirement down to minus 150 deg F.

The nickel steels for the BMEWS towers were supplied to a specification of 15 ft pounds minimum "V" notch charpy at minus 65 deg F.

W. S. MOUNCE
Supervisor
The International Nickel Co., Inc.
New York, N. Y.

(*Reader Comment continued p. 12*)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Safeguard Public Health and Public Funds with the one pipe that has all the features you can trust!

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It is the *one pipe* with all the advantages you want . . . *all* the features you can trust!

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CONTRACTORS: C & L Engineering Co., Augusta

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WORTH MORE BECAUSE THEY

New Chevrolet tandems do bigger day's work!

With a tough new build that includes revolutionary Torsion-Spring Ride and the strongest rear suspension yet, Chevrolet's new tandems are equipped to do more profit-producing work per day than ever before. They're built to move mountainous payloads faster and more efficiently over rough routes, on or off the road.

Chevrolet's new M70 tandems – available on 157-, 175- and 193-inch wheelbases – are built to work more and earn more on big-tonnage runs, with extra load capacity and sensational new Torsion-Spring Ride. It's a ride that takes the rough edges off the biggest of bumps, easing the strain on driver, cargo and chassis components alike. You get a new kind of smooth-going *roadability* that pays off out on the job by assuring more ton miles of operation per day . . . higher safe speeds for extra trips and bigger profits.

Underlying this new roadability is Chevrolet's tough new torsion-spring independent front suspension system – available in high 7,000-lb. and 9,000-lb.* capacities. Here, rugged cast and forged steel control arms guide each front wheel precisely, and heavy-duty spherical joints and massive pivot bearings keep friction low. And for maximum off-the-road handling ease power steering is standard in all tandem models.

New Eaton-Hendrickson Rear Suspension

Back under the load is a totally new tandem rear suspension featuring two big 16,000-lb. axles, with rugged walking beams and torque arms to keep them tracking true. New, direct single-line drive – simple yet rugged in design – features a new inter-axle differential that divides the driving load equally at all times for less wear and long, trouble-free life. And you get the best kind of big-truck *power*, too. Chevy's famous Workmaster V8, with 230 h.p., 335 ft.-lbs. of torque, 4-barrel carburetion and a complete lineup of premium heavy-duty features, is standard in all tandem models. **Optional at extra cost.*

WORK MORE! 1960 CHEVROLET STURDI-BILT TRUCKS

New Chevy pickups pay off in new ways

Chevy's new way with work makes short work of meanest hauling jobs – gets them out of the way faster and easier, more economically and profitably. Pick the pickup that suits your needs from Chevy's big 11-model lineup that includes stylish Fleetsides, handy Stepsides and new lower priced 4-Wheel-Drive models.

The trim, low lines of Chevy's 1960 pickups only hint at the tremendous difference in store for you. Their totally new chassis design is engineered from the road up to deliver payload performance like you've never known before. For example, Chevrolet's new torsion-spring independent front suspension and new frictionless rear coil springs give you the smoothest truck ride you've ever experienced whether loaded down or running empty.

And the new drop-center frame construction *lowers Chevrolet's over-all height.* This results in easier cargo handling, easier cab entry and exit. And it means a lower center of gravity which, teamed up with Chevy's advanced suspension, produces new stability on the road. There's new sure, easy handling that pays off in higher safe speeds, shorter trip times, more work and more profit per day!

All this and much more – including the latest in economical V8 or 6-cylinder power and new cab comfort – is yours in a '60 Chevy pickup. And new models in every weight class come equally well-equipped for bigger profit hauling! Get full details from your Chevy dealer. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

1960 CHEVROLET STURDI-BILT TRUCKS CHEVROLET

it's *Presst-O-Cel:*

the new closed-cell insulation

that's self-extinguishing...stops "sweating"...is watertight!

PRESST-O-CEL's low "K" factor protects against condensation and heat loss. It provides a vapor barrier and will not support combustion—that's the work record of new PRESST-O-CEL, the closed-cell insulation for protecting tube and pipelines on comfort conditioning and refrigeration installations.

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PRESSTITE DIVISION
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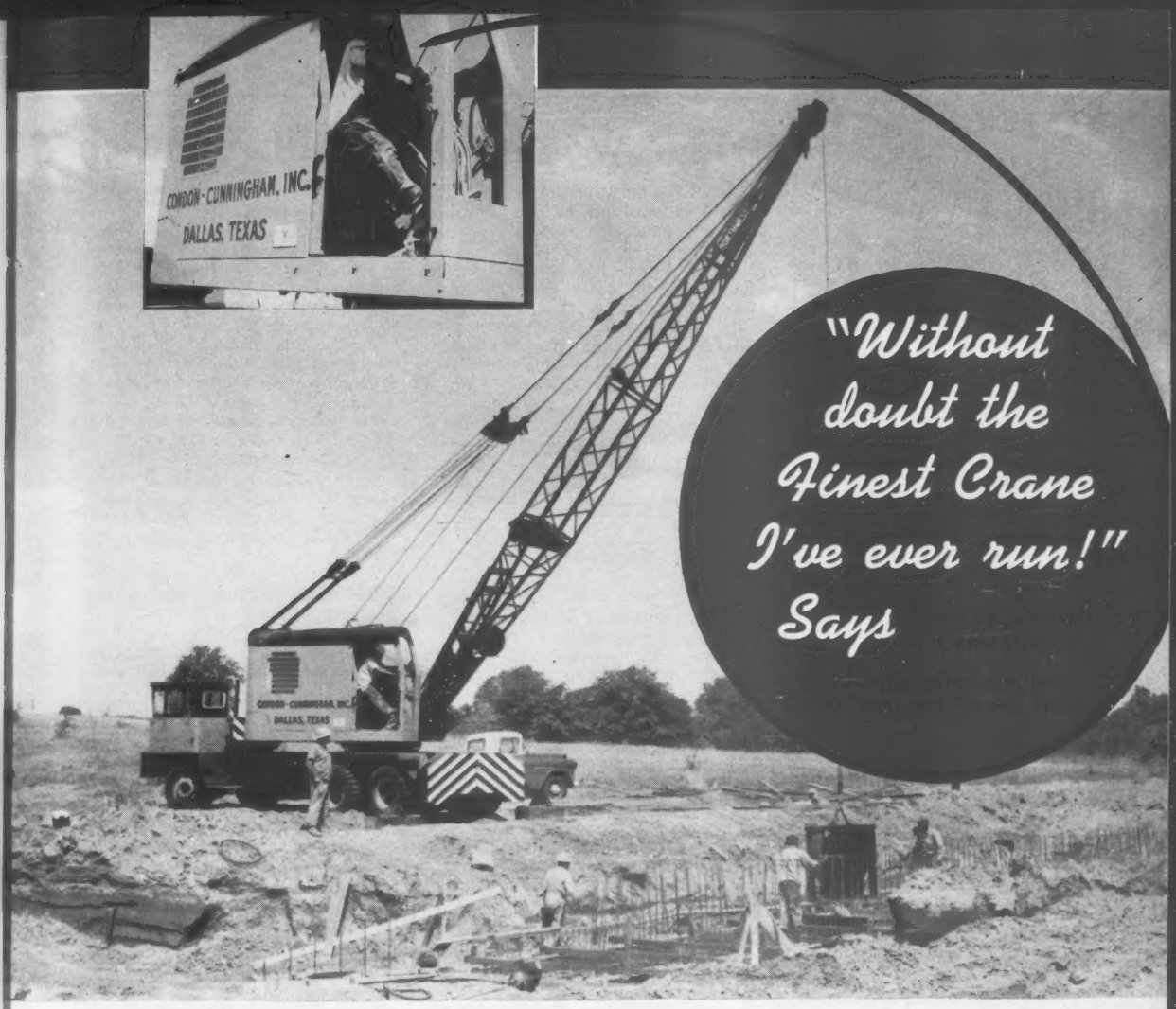

MR. JENSEN is an operator of long experience. What he says has more than ordinary meaning.

His comment is typical of the opinions we hear from all over the country. Your Northwest is always ready to go. Northwest Truck Cranes bring you High Speed Independent Boom Hoist—Power Load Lowering—Uniform Pressure Swing Clutches for smoother, easier control of the swing — Pin-connected booms — 3rd Drums — the Feather-Touch Clutch Control and many other advantages specified for crane operation.

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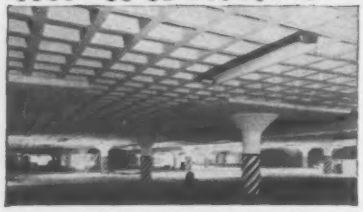
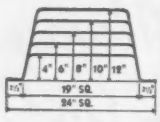
In progressive concrete garages, too . . . . . GRID SYSTEM CONSTRUCTION saves all around!



Off-Street Parking Garage, Post Office Square, Boston, Mass.

There's almost no end to the savings made possible by GRID SYSTEM Reinforced Concrete construction! Contractors realize cost savings with reusable, interchangeable GRID domes — and steel GRID domes are handled easily, require minimum shoring, save valuable building time. Two-way ribbed GRID SYSTEM construction also saves material and labor costs over comparable-strength flat slab construction. Extremely flexible in utility layout, GRID SYSTEM offers wide, column-free areas, approaches 100% concrete efficiency. Use the coupon below for further information on economical GRID SYSTEM, now in use in major construction from coast to coast.*

This all-concrete parking garage in Boston's Post Office Square utilizes GRID SYSTEM for maximum load-bearing strength at minimum cost. The GRID SYSTEM construction operations were completed in ten weeks, stressing GRID SYSTEM's time-saving economy.



Steel GRID domes are delivered to the job site in quantities large enough for any project. No charge is made for normal wear and tear, including necessary screw holes for sleeves, inserts, etc. All GRID domes have the same angle of pitch for uniform appearance.

*Among the buildings using GRID SYSTEM construction are: 110 William Street Building, New York City (31 story building); Billerica High School, Billerica, Mass.; Labor & Industry Building, Harrisburg, Pa.; Arnold Constable Store, Trenton, N. J.; Off-Street Parking Garage, Copley Square, Boston, Mass.; State Office Building & State Roads Building, Baltimore, Md.

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Bridge Weighs Only Half As Much

SIR—This is written to correct a glowing error in your article "Two Bridge Designs Contrast, but Both of Them Call for Aluminum" (ENR Jan. 21, p. 38), as well as an answer to your editorial in the same issue, "Sheet Metal for Bridges."

The stressed-skin, semimonocoque bridge leads to a highly efficient placement of all material, utilizing fabricating techniques proven to result in an economic structure. The error in your article is that the total aluminum alloy required for each installation is 356,000 lb. It should be 178,000 lb. per 96x212-ft structure. The resulting material requirement per square foot is 8.75 lb. With the material constituting a large percent of the total price, it is obvious that the Fairchild aluminum bridge, almost ½ the weight of comparable steel girders, is money-saving. In continuing production, the aluminum price would be many times that for fabrication, magnifying the necessity for a light-weight structure and again showing increased money saving.

The economical price per square foot for the aluminum stress-skin structure in place need be further reduced by 80 cents to $1.00, the cost of formwork required in other structures.

The aluminum structural depth of the Fairchild configuration is only 42 in., resulting in a specification deflection of 1/1160th of the span under H20-S16-44 loading.

The above comments definitely counteract the disadvantages mentioned in your editorial (p. 100) concerning high initial cost, high price of aluminum and more fabrication required. As will be seen from the two New York State bridges, in spite of the fact they represent initial insallations, their price will be more than competitive with existing structures.

The Fairchild aluminum bridge has three standardized configurations for structures from 30 to 120 ft which are simply modified to produce various skews, vertical curvatures, and superelevation. Although most designers and contractors are unfamiliar with this configuration, our firm is completing a text on the subject and recognizes that an acquainting program is necessary. Finally, the thermal effects that result from ±100 F temperature differences have been designed into the structure, these effects and theories having been satisfactorily tested and proven.

In summary, we believe this experiment will prove successful and economical, possibly becoming the turning point in the history of bridge construction.

HARRY J. KAHN
Vice President
International Aluminum Structures, Inc.
New York, N. Y.

Higher Pay for U. S. Engineers

SIR—Your article "Raise for U. S. Engineers" (ENR Dec. 24, 1959, p. 21) is misleading in its last paragraph. Raising the starting salaries of engineers in all salaries is only a temporary stop gap and an inequitable one at that. The 1958 adjustment automatically raised all engineers to the top level of their grade. To an engineer just being hired or to one who had spent only a short time "in grade," the raise was appreciable. To the engineer who had spent years "in grade" the raise was small or even nothing in the case of the man already at the top of his grade. This put men with little or no experience on an equal footing, pay wise, with much more capable men with years of experience.

Today the situation is even worse. With the exception of engineers who have been hired or promoted since the 1958 act, all engineers are already at the top of their grade. A repetition of the 1958 act would be even less effectual and less equitable than it was originally.

The entire pay structure for engineers in Civil Service needs to be reworked, not only to encourage engineers to enter the service, but to keep them there afterwards. This means not only more pay in most cases, but a higher top and more steps to reach it in order to advance and compensate the capable engineer.

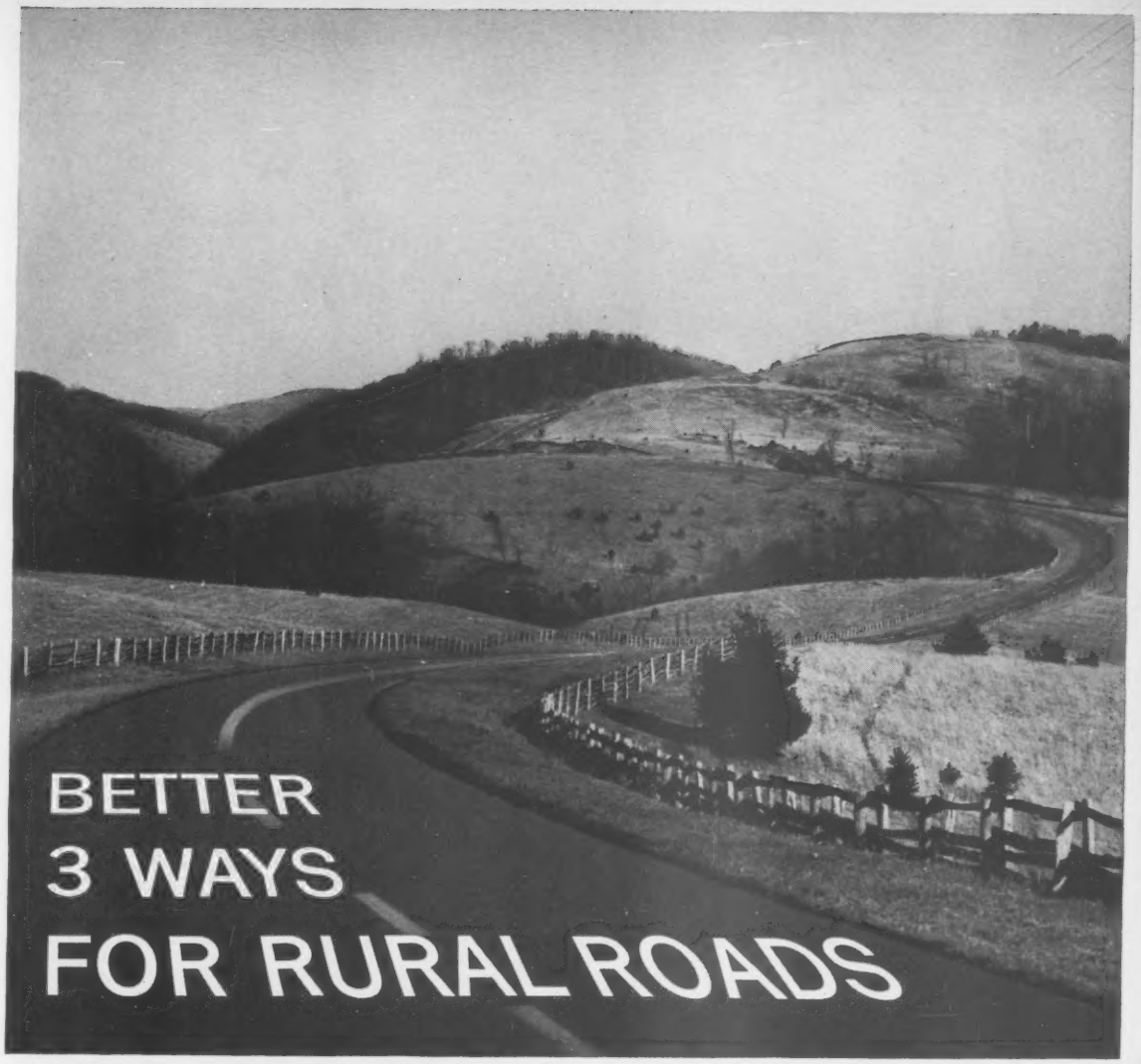
WILLIAM W. ELMER, JR.
Sherwood, Ore.

Registration Differences

SIR—Your recent Reader Comment on registration of engineers and architects ignores a basic difference: Architects' registration laws are designed to control the number of people practicing; engineers' laws are to determine engineering fitness of applicants. The idea that the public must be protected from engineers (who doing architectural work) is so ridiculous for the structures to which usually applied that architects have never to my knowledge claimed that a structure was a poor design.

Although building construction may in some states qualify for an engineer's license, it never qualifies for architectural. As a result, architects insulate themselves from practical building knowledge.

KING ROYER
Lenox Construction Co.
Atlanta, Ga.



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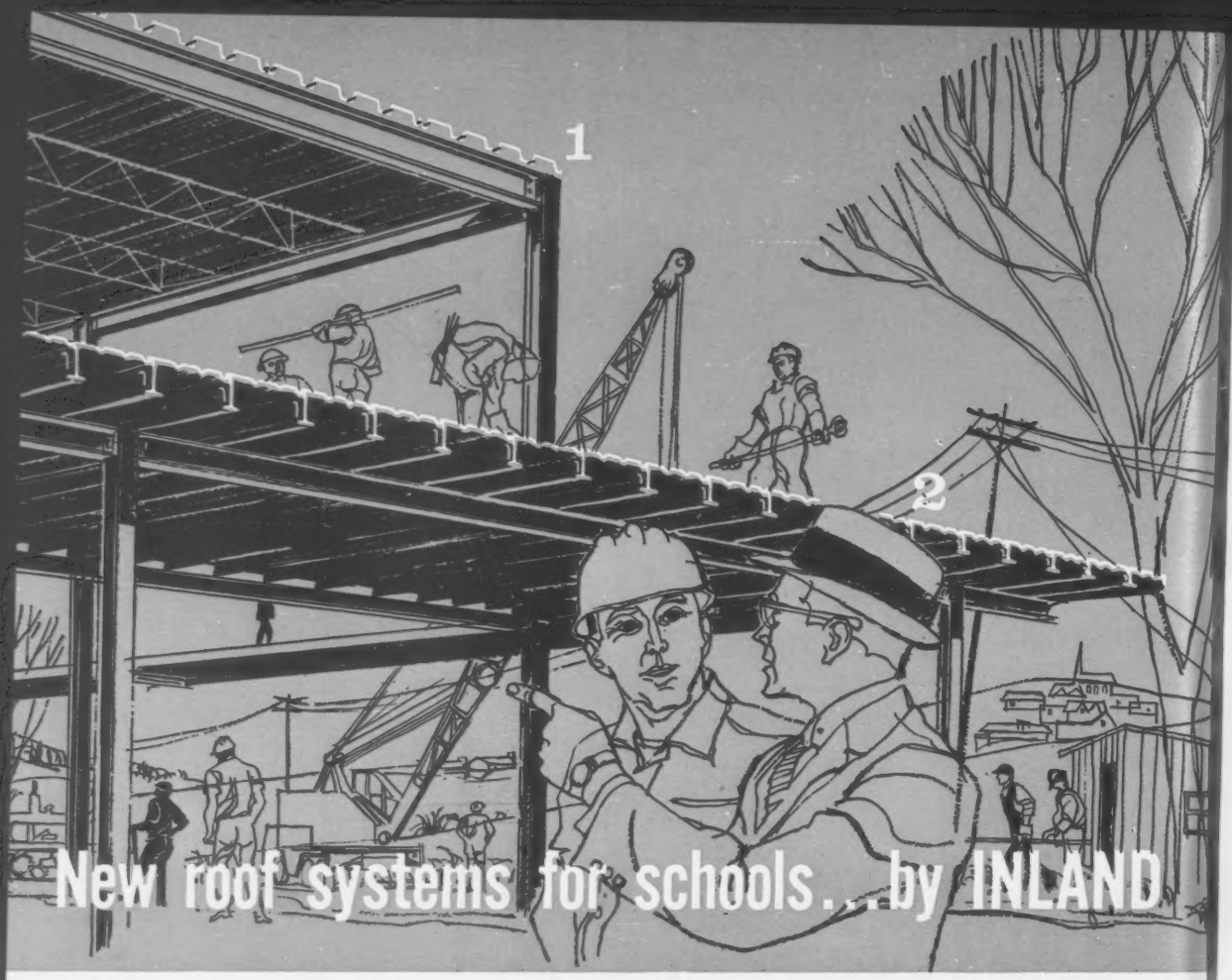
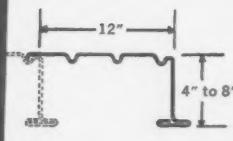


New roof systems for schools . . . by INLAND



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Ceiling Treatments with T-Steel Deck

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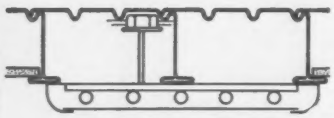

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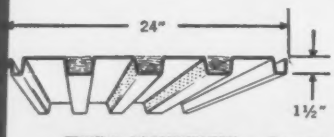
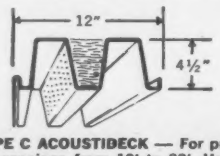
Lath-and-Plaster Fireproofing



TYPE B ACOUSTIDECK — For purlin spacings from 6' to 10'. Uses minimum of 1" rigid insulation board.



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Especially suitable over classrooms of 26' to 32' spans —or other areas where you want an attractive unbroken ceiling surface.

You can use various types of acoustical tile — provide a flush, luminous ceiling — or leave the underside exposed and painted.

Write for catalogs 240, 241, and 246 or see Sweet's, sections 2c/Inl and 11a/In. Inland Steel Products Company has trained sales engineers capable of giving you the benefit of their diversified experience on specific problems. Write or call your nearest Inland office.

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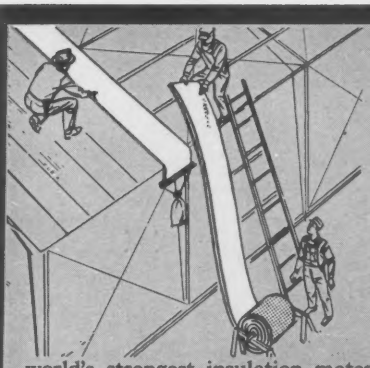
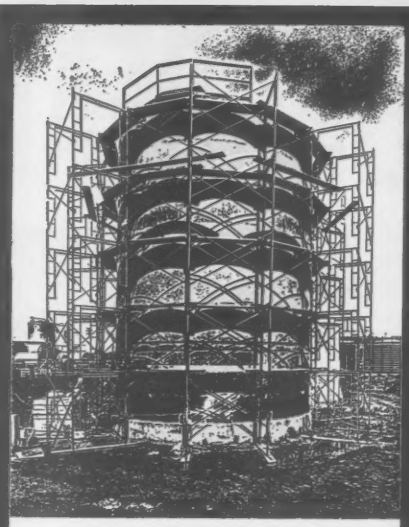
GUSTIN-BACON
reports to readers of Engineering News Record on

NEW IDEAS in Glass Fiber Insulation



DID YOU KNOW?

. . . that no insulation can be applied to a metal building, during or after construction, faster or with less waste than G-B ULTRALITE® glass fiber blankets. It's true! High in thermal and acoustical efficiency, ULTRALITE is flexible, easy to handle, and it is the world's strongest insulation material. For details on the installation of ULTRALITE in all types of metal buildings write today.



HOW TO WRAP TANKS AND REAP SAVINGS!

An uninsulated tank is like a giant radiator heating the great outdoors—and that costs money! Over 90% of this heat loss can be saved by insulating tanks with ULTRALITE glass fiber blankets —a modest investment that can pay for itself in 6 months to a year! Details? Just ask for the *Ultralite Tank Brochure.*

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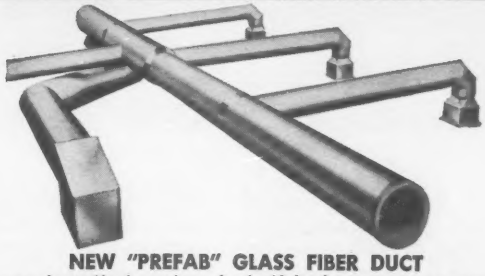
Snap! . . and 3 ft. of high velocity duct is insulated with vapor-barrier-faced G-B SNAP* ON®, the one-piece pipe insulation molded of fine glass fibers. Cuts application time; provides uniform and permanent thermal protection of highest order. Ask for *G-B Snap*On® Brochure.*



NEW "PREFAB" GLASS FIBER DUCT

. . . cuts installation time in half in homes or commercial buildings. It's G-B DUCT, the round glass fiber duct encased in a vapor barrier. Comes in ready-to-use 6′ sections, easy and foolproof to install. Tops in thermal efficiency—and every inch acts as a sound trap! Ask for *G-B Duct Brochure.*

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Thermal and acoustical glass fiber insulations . . . Molded glass fiber pipe insulation . . . Couplings and fittings for plain and grooved end pipe

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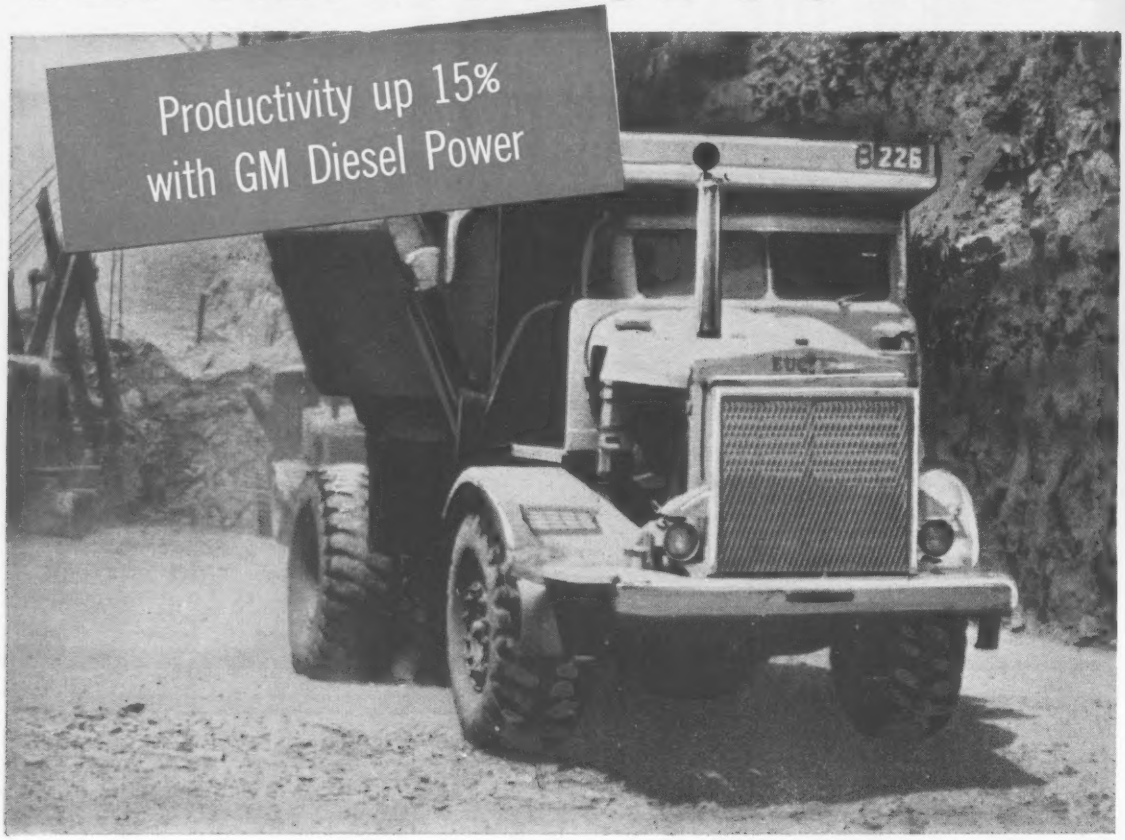

Imagine what your profits would be if you could cut down the size of your equipment fleet without losing any production. Or if you got more work done with the construction equipment you have now.

Gull-Defelice—contractors handling a major part of the Niagara Power Project—don't have to imagine, they know.

They put 6 GM Diesel-powered Euclid 27-ton rear-dumps to work side by side with 6 more "Eucs" powered with other Diesels—kept a sharp eye on productivity per unit.

Result? The GM Diesel-powered trucks hauled an average of 78.68 tons per hour compared with 68.12 tons for the other rear-dumps. On an 8-hour shift, that adds up to 84.48 *more* tons hauled.

What's more, Gull-Defelice found it cost 25.4% *less* to operate the "Jimmy" powered units on a ton-hour basis.

You, too, can boost your productivity —realize more profit from your equipment investment—with GM Diesel power. And on some jobs, the bonus productivity of General Motors Diesel-powered equipment could well save you the cost of an additional scraper or dump truck.

Before you figure your costs on your next bid, find out the savings you can make with GM Diesel power. See your GM Diesel distributor for full information or mail the attached postcard today.

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costs on your
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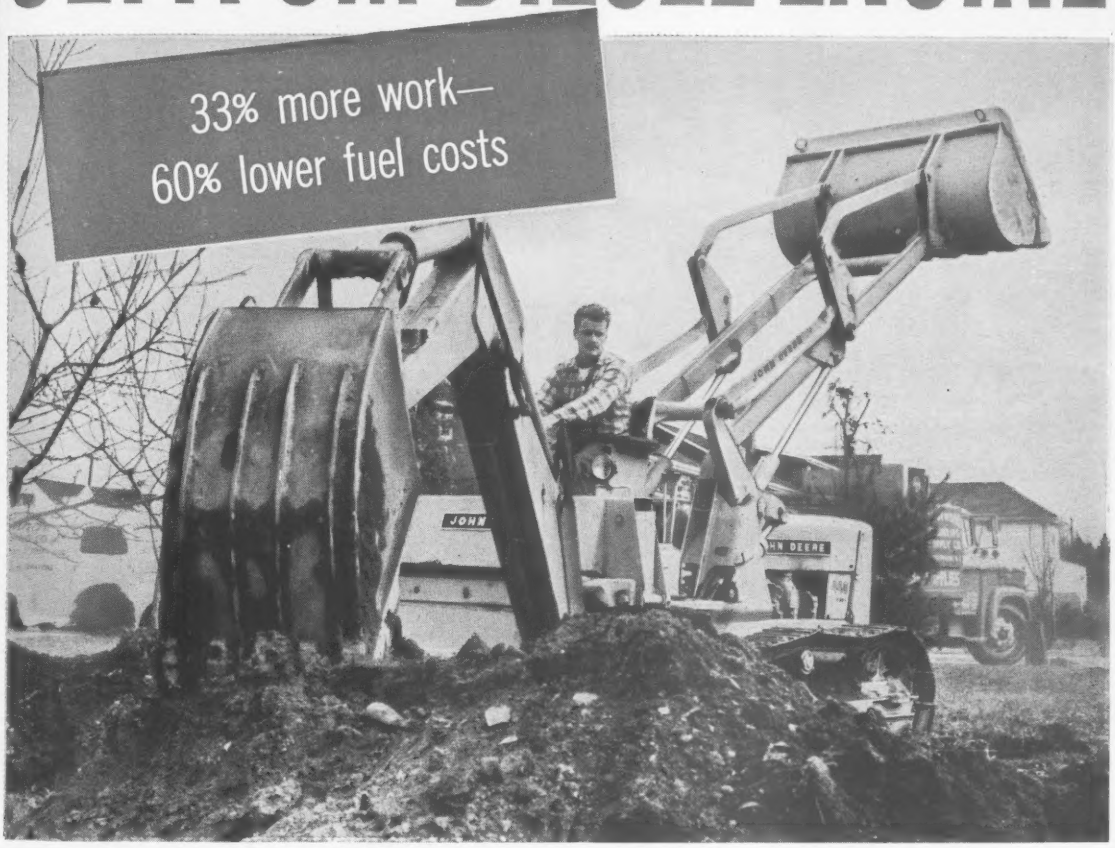

Load a 5-yard dump truck with a ⅞-yard front-end loader in two minutes and you're really moving dirt.

And that's exactly what Robert Kruger of Emerson, N. J., is doing with his General Motors Diesel-powered John Deere 440 ICD.

He replaced a gasoline-powered unit with this tractor, says his new rig "works ⅓ faster—cuts fuel bills 67%—delivers lots more power."

And he'll also tell you his GM Diesel-powered machine outworks other Diesel tractors with higher ratings.

And why does the 440 work so fast? Listen to Mr. Kruger: "It's the 'Jimmy's' quick response to the throttle—that engine sure revs up fast."

Mr. Kruger is earning more—saving more—because of the extra productivity he's getting since he switched to a General Motors Diesel-powered machine. You could be doing what he's doing if you had a "Jimmy" Diesel in your equipment. Details? Call your General Motors Diesel distributor—he's in the Yellow Pages under "Engines, Diesel"—or mail the postcard today.

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Sets the standard of Diesel productivity

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THE JOHN DEERE 840 with HANCOCK SCRAPER

saves time on windrow loading

Loose windrows from fine grading are loaded fast by the Hancock Scraper's slat-type elevator. Paving Contractors, Inc., of Wichita, Kansas, report their unit round-trips every 6 minutes on a .7 mile haul doing work like this.

This tractor and scraper rig handles everything from hard clay to loose sand—and does it economically. The elevator not only speeds loading, but it also breaks up material; this feature insures even, fast spreads. Scraper dumps in seconds by hydraulic ejection.

U-turn requirement of less than 30 feet, permits turns between nearly all standard street curbs. Over-all width is less than 8 feet.

Parts and service available in principal cities. For the name of your John Deere Industrial Dealer, consult your classified telephone directory. For the information you need on this unit or on the John Deere Credit Plan, see your dealer or write today.

John Deere Industrial Division, Dept. 2532, Moline, Illinois

JOHN DEERE *"Specialists in Low-Cost Power with a Heavyweight Punch"*

ENGINEERING NEWS-RECORD

Vol. 164, No. 7 February 18, 1960

Number of copies printed this issue 85,500

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THE CONSTRUCTION WEEK

HOUSING: GOING DOWN—Private housing starts in January slid 9% from December on a seasonally adjusted annual basis. It was more than a seasonal drop, the Census Bureau reports. Starts were at an annual rate of 1.21 million. But federal officials say they expected the decline, because December's increased rate was "a freak figure."

PRIVATE PEOPLE PROFIT PUBLIC WORKS—It's cheaper for a government agency to hire consulting engineering firms than to build up its own staff, according to a report the National Society of Professional Engineers will release at its winter meeting in Wichita this weekend. NSPE surveyed 118 consultant firms on fees received on 1,464 contracts for 17 different government agencies.

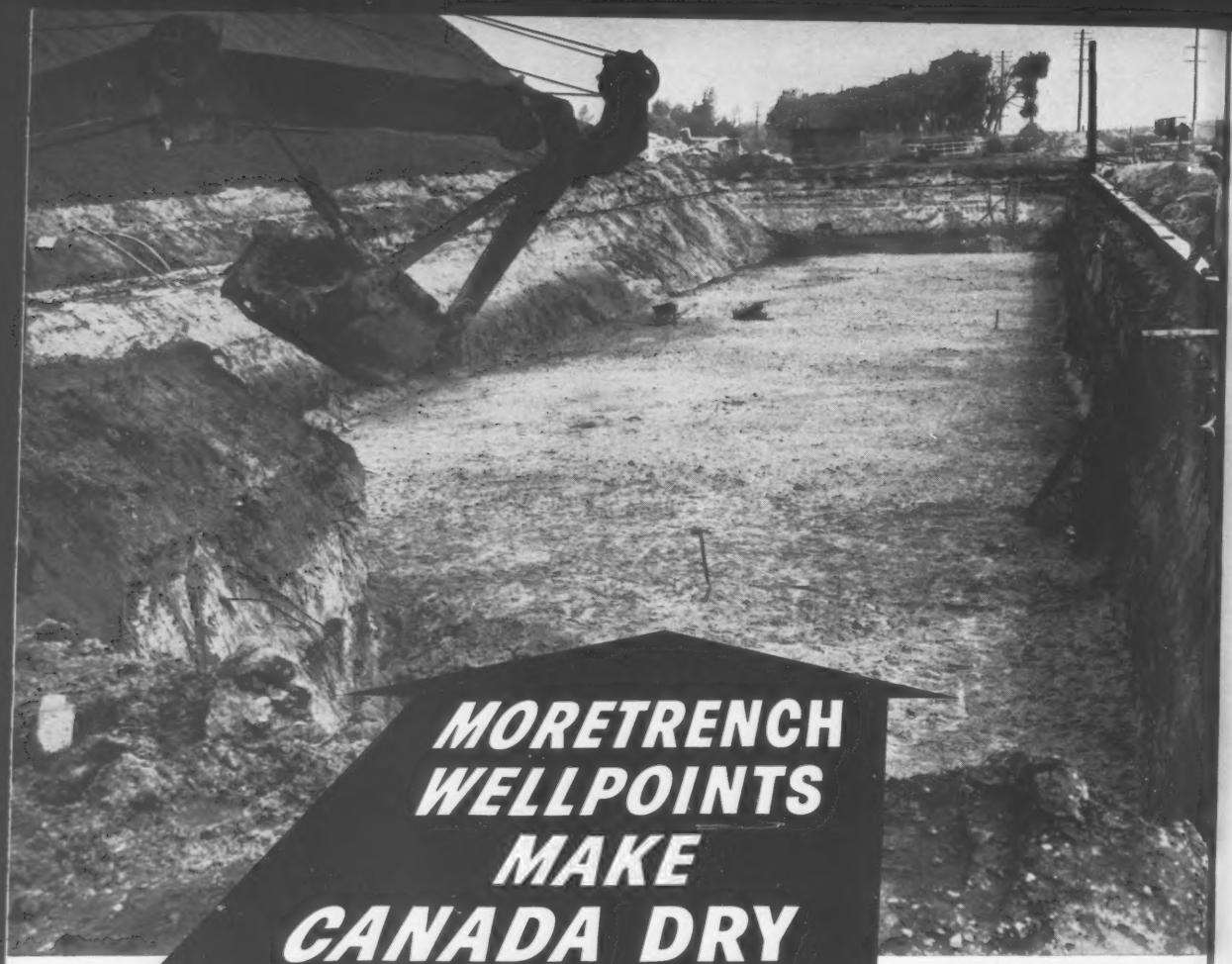
CRYING "WOLF?"—The classroom shortage is not as severe as described, according to Arthur S. Flemming, Secretary of Health, Education and Welfare. Forty-five of 50 state education officials responding to a HEW poll "identified only 270 school districts out of 35,000 in their states that had classroom shortages" and had reached their debt limits.

NEW PLANT FOR NEW MISSILE—Planned for construction at Brigham City, Utah, is a plant estimated at $34 million for production of Minuteman intercontinental ballistic missiles. Owner will be Ballistic Missile Division of Air Research & Development Command, Inglewood, Calif. Hill Ordnance Plant, at Ogden, Utah, will be renovated as an assembly plant for the weapon. Estimated cost: $11 million.

ATOMIC SERVICE PARK—The Atomic Energy Commission is studying a proposal by industrial promoters to build the nation's first atomic service park in southern New Jersey. It would include a plant for processing radioactive wastes, facilities for docking and refueling atomic-powered ships, and a hospital research center for radiation-caused illnesses.

SAFETY CAMPAIGN—Philadelphia will open a drive to eliminate fire and health hazards in 6,000 abandoned buildings. Private contractors will aid city workers in clearing and boarding up the vacant structures. Property owners who have not responded to city orders will be billed for the costs.

A CONSTRUCTION CAMP GRADUATES—Boulder City, Colo., which started out as a construction camp for workers on Hoover Dam 29 years ago and grew into a sizable city, is being transferred to the citizens for self-rule. The Bureau of Reclamation has already sold its 180 housing units in the community. The new city charter provides for a council-manager type of government.



MORETRENCH WELLPOINTS MAKE CANADA DRY

Engineers: Stone & Webster Canada, Limited

In this neat, deep, DRY foundation — 300′ away from Lake Ontario — go the 90″ reinforced concrete pipes which return water to Lake Ontario after it has passed through the condensers in the new extension to Ontario Hydro's Richard L. Hearn Generating Station.

Ground level is 252, water table 246, subgrade 236. Material — sand pumped in from the lake.

(Note the thousands of tons of coal stockpiled close to the excavated area, giving further evidence of soil stability.)

"Much of our success on this project is attributable to the excellent ground conditions created by Moretrench equipment," says John Famigletti, president of Atlas Excavators, Ltd., Toronto contractors for the excavation and installation of the pipe.

When your problem is water, call us. We can help!

Photo courtesy Ontario Hydro Photography Section, Graphic Dept., Information Division.

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WASHINGTON OBSERVER

- Probe planned for materials prices
- AEC report divvies up A-power work
- B-47s to disperse to civil airports?

● **Building material manufacturers are in for a going-over on prices.** The Senate Antitrust and Monopoly Subcommittee staff is working on an investigation of material manufacturers' pricing policies. Public hearings are planned, along the lines of the subcommittee's current inquiry into drug company pricing. But hearings probably won't get under way until next year.

Early targets of the investigators will be producers of glass, plumbing fixtures, asbestos, and gypsum products. Not all of these may be involved in public hearings before Chairman Estes Kefauver. Other products, such as cement and aluminum, may get much of the attention.

The new investigation is part of Senator Kefauver's continuing study of what he calls "administered pricing" in concentrated industries. He has already covered steel, autos, bread and roofing materials and is now at work on drugs. In all these hearings, he and his investigators principally are after an explanation for the power of a few companies over prices and a justification of current high prices.

Estes Kefauver cites recent price increases by the plumbing fixtures industry. He says a few large manufacturers made identical price boosts, in the absence of any prior advance in prices of steel or other basic materials. He blames the high price of building materials for contributing to the projected decline in housing starts.

—

● **An economic nuclear electric industry will be built up in the next 10 years, the Atomic Energy Commission predicts.** Chairman John McCone told the Joint Committee on Atomic Energy this can be achieved by construction of prototype and large-scale power plants in the next decade.

AEC recommends that it construct the experimental reactors. That is the job of testing various types of power plants, such as pressurized water, gas-cooled, and organic moderating.

Intermediate-sized protypes would be build jointly by the commission and industry.

AEC wants utilities to build the big commercial-sized plants; but it would consider giving some assistance.

—

● **The Air Force is studying a plan to disperse B-47 medium-range bombers to civilian airports. The scheme would involve some new construction.**

To make the plan workable, the Air Force would have to put up new ramps and taxiways, as well as special fuel, communications, and ordnance storage facilities at the civilian fields. There's no decision yet on when the new work would be started.

The plan is designed to keep the obsolescent B-47s usable as strategic weapons for some time to come. Soviet missiles of 1,500-mile range could hit the B-47 bases overseas. The Air Force plan would permit wider dispersal in the U. S., making more targets that the Soviet could hit. From these civilian commercial airstrips, B-47 squadrons could wing to Soviet targets in retaliatory attacks after refueling from jet tankers at 40,000-ft rendezvous.

New Living Space for Fort Lauderdale will rest on RAYMOND FOUNDATIONS

Architect: Charles F. McKirahan
Engineers: D. E. Britt & Associates
Contractor: Breakwater Housing Corporation
All of Fort Lauderdale, Florida

Adding to the list of impressive structures supported by Raymond Foundations is Breakwater Towers, a striking 16 story apartment building in Fort Lauderdale, Florida. When completed in 1960 it will provide housing, in a variety of apartment units, for several hundred families.

From coast to coast new apartment complexes and structures such as this are becoming a unique feature of 20th century life. And Raymond is playing an important role in this construction. For example, over half a million people currently live in buildings on Raymond foundations—and this figure is growing daily. If there's a foundation in *your* future, we'll be happy to talk to you.

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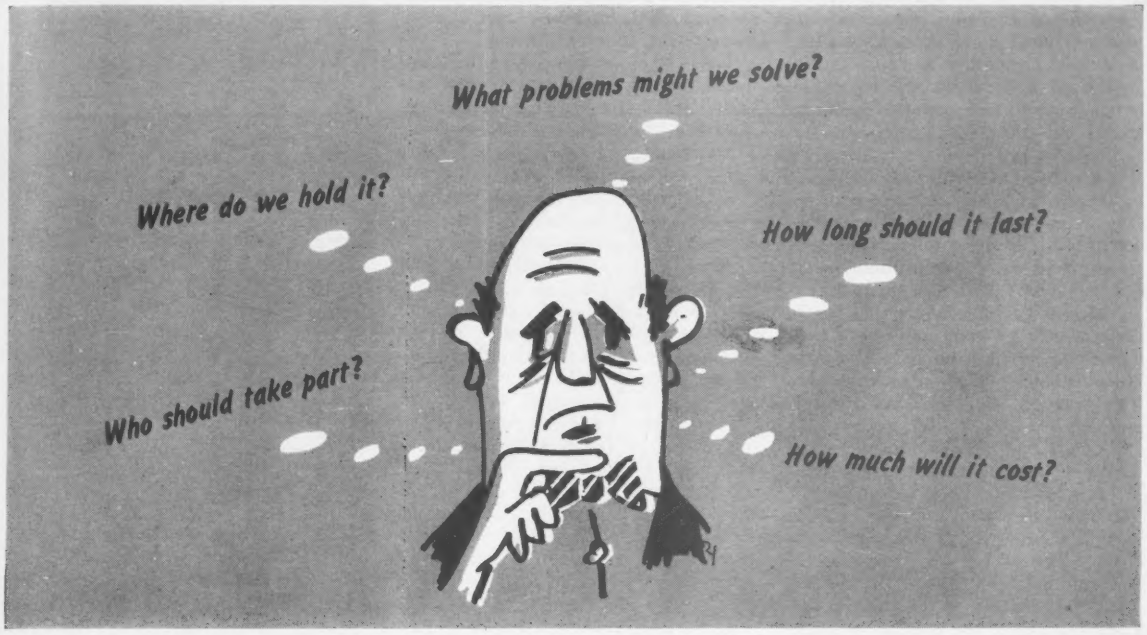


Management Meetings: Worth It?

A regular, full-scale management meeting is an expensive proposition. It doesn't build a bridge, top out a skyscraper or win a contract. And the dollar return on the investment can't be measured.

But for a number of construction's top companies, it's a must.

They find such meetings indispensable for establishing communication between top management and other executive employees, for generating ideas that could pay off.

No company has discovered a way to measure the dollar value to the company, but they agree that somewhere along the management-meeting route, the company gains in efficiency and productivity.

Size and content of the meetings vary sharply: Some are elaborate, others almost Spartan, a few informal. But all apparently pay dividends.

Still, of ENR's last list of contractors who did more than $25 million in volume (ENR Apr. 30, 1959, p. 21), the majority do without management meetings. And at least one on the list tried them, but gave them up.

H. B. Zachry Co. of San Antonio discontinued its broad-based management meeting two years ago. "We felt the expense and effort was not worth it," says L. D. Lang, assistant to the president. Instead, the company now holds meetings for area superintendents.

Five companies queried in ENR's spot check call meetings for 75 to 165 supervisory and key personnel. They are: Blount Bros. Construction Co., Montgomery, Ala.; Hendrickson Bros., Inc., Valley Stream, N. Y.; Morrison-Knudsen Co., Inc., Boise, Idaho; Perini Corp., Framingham, Mass.; and Fruin-Colnon Contracting Co., St. Louis. (For a full report on the Fruin-Colnon management meeting, see p. 146). The Hendrickson company schedules its management meetings quarterly; the other companies hold theirs annually.

Five other companies conduct sessions that range in attendance from 18 to 50 persons. They are: S. J. Groves & Sons Co., Al Johnson Construction Co., and Johnson, Drake & Piper, Inc., all of Minneapolis; C. H. Leavell & Co., El Paso; and United Engineers & Constructors Inc., Philadelphia. United Engineers usually calls its sessions quarterly, but in any case, never less than every six months. The others are held annually.

The big-scale meetings are carefully planned affairs. Detailed programs are distributed to all participants in advance of the sessions.

Significantly, the companies report that their management meetings are a valuable morale-boosting instrument. In some cases, social functions are an important adjunct to the meeting.

W. M. Blount, president of Blount Bros. Construction Co., told ENR:

"Because of our widely dispersed operations, we believe the meetings have been invaluable in the development of our company through the exchange of ideas of our supervisory personnel in construction and engineering methods and systems.

"With the inclusion of the wives, we believe we have also developed a certain esprit de corps and better understanding throughout the organization."

Blount's management meeting brings together with top management, approximately 100 superintendants, engineers and foremen. It is held on a weekend, but business is confined to Saturday. While the men discuss business and technical problems their wives are guests of the company at an outing.

Major emphasis of the business get-together is on workshop sessions. Workshop chairmen and most speakers are Blount employees, although occasionally speakers are brought from outside.

Morrison-Knudsen's three-day annual

management meetings are attended by about 100 persons—directors, officers and all others who have supervisory or management responsibilities.

The first day, they discuss and analyze the work outlook for M-K divisions, districts, subsidiaries and associated companies. Then follows a lengthy analysis of estimating results and bidding of new work. Also covered are reports on purchasing and transportation, labor relations and safety.

The last two days are reserved for executive sessions, usually attended only by officers, members of the board and the key specialists involved in various details of the company's operation, such as employees' stock acquisition, incentive retirement plan and taxation.

M-K has held these meetings for 20 years, which is a good measure of their importance to the company. They cost "considerable money in salaries and transportation," says H. W. Morrison, president.

Perini Corp. has held management meetings for several years. Its latest meeting, in December, was in Boston, the home base. But previous sessions were at or near major jobsites: in northern Quebec at Labrieville, where the company has been at work on the Bersimis power plant; West Palm Beach, Fla., location of the company's industrial-residential development project; Messena, N. Y., when the St. Lawrence jobs were under way.

This winter's three-day meeting brought together 75 persons from project managers up. Included were 14 trainees, who were responsible for most of the talks (ENR Nov. 7, 1957, p. 145).

Hendrickson Bros. management meetings are not as concentrated or as lengthy as those of the other companies. Sessions are measured in hours, rather than days—about two hours each. But they are held every three months for 90 to 100 department heads, supervisors, engineers and foremen.

These sessions open with president M. A. Hendrickson's review of the completed quarter and his outlook for the coming quarter.

Balance of the meeting consists of technical and safety films and discussion of field and office problems.

Mr. Hendrickson describes the meetings as "morale boosters." They give the supervisory people an idea of "what the rest of the company is doing and how they are making out."

United Engineers & Constructors, Inc., also holds quarterly management meetings. About 30 persons attend the sessions at the company's main office in Philadelphia. Participants are the president, vice presidents, construction managers, one or two supervising engineers, and managers for cost control, labor relations and field accounting and the safety engineer.

The meetings are confined to business; technical sessions are held separately. At the business meetings, status of company operations up to the time of the meeting is reviewed and future operations are projected. Any management problems that developed since a previous meeting are also discussed.

Thirty to 50 persons attend the Johnson, Drake & Piper management sessions. Included are all officers, job managers and key estimators and engineers. The meetings have been held for the last 12 years.

John Drake, vice president, says they develop "better liaison and better understanding of others' problems."

The program includes reports of general management and divisions, discussion of inter-divisional problems and projects, explanation of new policies that may have been introduced and employee relations, including a "gripe session."

C. H. Leavell & Co. brings in 45 to 50 of its personnel to management meetings. They include officers, chief warehousemen, all engineers, department and field supervisors, accountants and safety engineers. The meetings last three days. The first day consists of round-table discussions of business and presentation of technical papers.

On the second day, Charles H. Leavell, president, and the company's general manager tell what the company plans to do in the way of jobs and general administration. The session is designed to give supervisory people a closer look at, and a better understanding of, management. "It's an attempt to establish communication with the men," says Mr. Leavell.

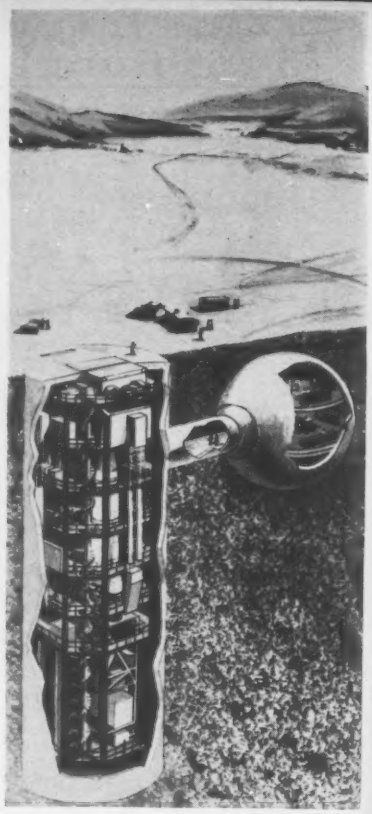
HRH Construction Corp. of New York City and S. J. Groves & Sons Co., vary from the general pattern of all-inclusive management meetings. Both companies hold management meetings for all those involved in management of projects.

Groves has held such meetings annually since 1940 at its main office in Minneapolis. Purpose is to review the preceding year's business and blueprint the company's activity for the approaching year. Business and finance receive the most attention, although technical problems are covered if necessary. About 22 persons attend.

HRH does include its chief estimator and chief expediter in its meetings, which are held quarterly.

Al Johnson Construction Co. brings in more than 50 people to its two-day meeting. They include superintendents, master mechanics, engineers, and office managers.

The program includes instruction workshops for mechanics, engineers and superintendents. Subjects are new construction methods, new equipment operation and equipment maintenance.



Atlas launchers of the future . . .

Missile

The ICBM base construction program is running on schedule, say Pentagon officials. They deny charges that the missile program is held back by construction contractor delays.

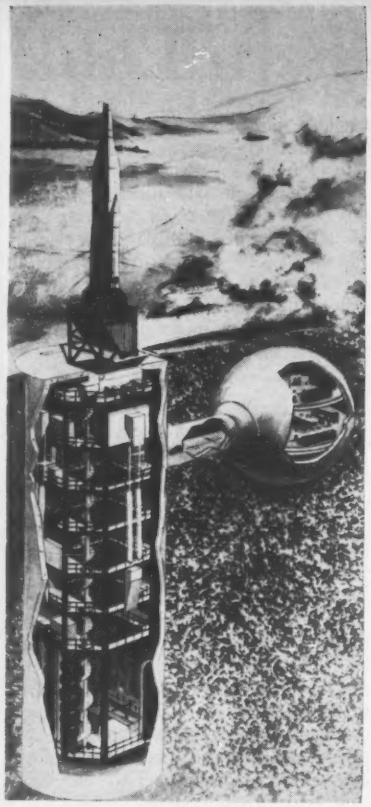
The charges stem from allegations by the Atlas producers, the General Dynamics Corp.'s Convair Division, that they are "turning out missiles faster than the Air Force can take them off our hands."

The fact is this: Atlas is tooled up to produce many times the number of weapons than have been authorized. The manufacturers are pushing for increased schedules to use the idle production capacity.

The current production schedule calls for 13 Atlas squadrons—10 missiles per unit—and base construction is geared to this program.

As the program stacks up now, three missile launchers—at Vandenberg AFB, Calif.—are now operational. This is one-third of a complete squadron. A missile squadron has nine launchers; one ICBM is kept in reserve.

During the summer construction will be completed on two Atlas installations. Construction for another three squadrons should be finished by fall.



will get underground protection.

Atlas Bases:

Vandenberg AFB, Calif.—Begun June 1957. Will have operational squadron. Three soft launchers* operational now. Six hardened launchers under construction. Base includes Atlas and Titan experimental installations.

Warren AFB, Wyo.—Six soft launchers begun July 1958, to be completed this summer. Nine semi-hard launchers begun March 1959, completion this fall. Nine semi-hard launchers begun April 1959, completion mid-1961.

Offutt AFB, Neb.—Nine semi-hard launchers begun April 1959, to be completed this summer. Three complexes of three launchers each.

Fairchild AFB, Wash.—Nine semi-hard launchers begun May 1959, to be completed this summer. Nine separate sites.

Forbes AFB, Kan.—Nine semi-hard launchers begun May 1959, to be completed this fall. Nine separate sites.

Schilling AFB, Kan.—Contracts to be awarded in March for nine hard launchers on separate sites. To be completed in 1962.

Lincoln AFB, Neb.—Contracts to be awarded in March for nine hard launchers on separate sites. To be completed 1962.

Altus AFB, Okla.; Dyess AFB, Tex.; Walker AFB, N. M.; and Plattsburgh AFB, N. Y.—Contracts to be awarded by July for nine hard launchers on separate sites for each base. To be completed by mid-1962.

Titan Bases: *(All hardened and made up of three-launcher complexes.)*

Lowry AFB, Colo.—Eighteen launchers begun July 1959. Completion: spring, 1961.

Larson AFB, Wash.—Nine launchers begun November 1959. Completion: spring, 1962.

Ellsworth AFB, S. D.—Nine launchers begun December 1959. Completion: January 1962

Beale AFB, Calif.—Nine launchers just begun. Completion: January 1962.

Mountain Home AFB, Mont.—Nine launchers begun. Completion: June 1962.

* Launchers include supplementary buildings.

Here's how the missile base construction program stands.

Base-Building Is on Schedule

Despite their claim that the over-all ICBM base construction program is running on schedule, Pentagon officials concede that completion dates have been delayed along the line. The reason: A "staggering number" of construction change orders stemming from modifications in the missiles and support equipment.

Says one Defense official: "A number of our construction contractors have been in hot water and have needed a helluva lot of prodding to get the job done on time. Still, none of our companies have failed so far."

But there's considerable installation work to be done by the Air Force—"putting in the jewelry," as one Pentagon man puts it—after the Army Corps of Engineers completes construction.

The Air Force's time schedules for underground ICBM bases is:

- Site selection, including topographic studies and layout—three months.
- Design—five months.
- Advertising and bid awarding—six weeks.
- Installation of ground support equipment and checking out—10 months.
- Construction—13 to 15 months.
- Final testing, installation of missiles—three months.

There's little likelihood Washington will expand the Atlas program. The additional missiles wouldn't be ready for deployment until 1963. By then, the more advanced Minuteman solid-fueled ICBM should be operational.

Atlas missiles will go to bases built as soft, semi-hard and hard. At soft bases everything is above ground. Semi-hard bases have the missile stored below ground horizontally; it must be uncovered and raised to a vertical position for firing. At hard bases ICBMs are stored underground vertically and raised to the surface for firing. All Titan bases are hard.

Fourteen Titan squadrons will be deployed, as the program shapes up now. But this could be changed. The missile has been plagued by serious developmental bugs and the Pentagon is reassessing the program.

No more Titan construction awards are planned until some time in fiscal 1961, starting July 1. The fiscal 1961 defense budget, now being debated in Congress, earmarks funds for four Titan bases. The fiscal 1962 budget, which will go to Congress next January, is expected to provide for four more.

The last eight Titan bases are planned as silo-launch installations—that is, with the missile capable of being launched directly from underground.

The fiscal 1961 budget also earmarks funds to begin construction of the first three Minuteman ICBM bases. First construction contract awards will probably be made some time after January 1961.

In final form, the Minuteman silos will be the simplest of ICBM missile launchers. They will be little more than concrete firing tubes in which stands approximately 6 ft high will be placed with missiles sitting vertically on them. The missile is solid-fueled and will not need last minute servicing. In theory it will be fired push-button style from a remote control location.

Cost of the underground missile silo complexes varies from approximately $22 million for three launching clusters of three missiles each to approximately $44 million for nine one-missile sites.

Titan missile launching silos will run around $42 million on a three-complex layout to some $49 million for nine separate launchers.

Road Probers Look

JOHN A. BLATNIK asks the questions.

D. K. CHACEY answers for Defense.

E. L. ERICKSON speaks for BPR.

A. G. SIEGLE is second BPR witness.

It took nearly 18 months of study for the Defense Department to decide on 17 ft as the clearance it needed on Interstate highway bridges. Why, then, did Defense change its mind in a quick restudy and settle on 16 ft?

Some light was shed on Defense's turnaround by the House public works special highway subcommittee, which last week began its investigation into the administration of the Interstate highway system.

Last October 1, according to testimony, the Defense Department informed Federal Highway Administrator Bertram F. Tallamy that it needed a minimum clearance of 17 ft. The American Association of State Highway Officials then approved the 17-ft standard at Mr. Tallamy's request.

The full story of why Defense later decided on 16 ft remains to be told when the subcommittee's hearings resume this week.

This week's testimony was expected to unfold a story of Commerce Department concern over the 17-ft request, return of the problem to Defense and the final decision, worked out by Perkins McGuire, Assistant Secretary of Defense for Supply and Logistics.

The subcommittee this week was also expected to track down a rumor that there was a full month's delay between the time Defense made its final decision and the time Secretary of Commerce Frederick H. Mueller authorized the 16-ft height. The Bureau of Public Roads sent new instruction to the states on Jan. 27 (ENR Feb. 4, p. 23).

The tenor of questions last week indicated the subcommittee's intense interest in costs and in the proposition that the Defense Department should pick up some of the tab.

Whatever increases the higher bridge standards will bring should be paid by Defense, not by highway users, declared Rep. Frank M. Clark (D., Pa.). Rep. Gordon H. Scherer of Ohio, the ranking Republican, pointed out that gasoline and tire taxes paid by Defense haulers are a pittance compared to the cost of what the military is asking and getting.

In its first days of hearings the committee concentrated on operating officials from the Department of Defense and the Bureau of Public Roads. Chairman John A. Blatnik (D., Minn.) was developing a full record of what happened on bridge clearances before calling the top men, such as Mr. Tallamy, who are responsible for making the present policy.

On the witness stand were D. Kenneth Chacey, Army Assistant Chief of Transportation, and BPR's Arthur G. Siegle, Chief of the Defense Plans and Operations Division, and Eric L. Erickson, Chief of the Bridge Division.

The BPR officials did not pinpoint the cost of building future bridges to 16 ft. But they estimated it would add about 5.2% to what a bridge built to the old 14-ft standard would cost. Raising an existing 14-ft structure, however, would cost more than half again as much as the price of original construction.

Highways,

Highway and bridge work is on the upturn; 1960 should be a banner year from the standpoint of total volume.

But the average number of bidders on individual projects is also up.

And bid prices generally are increasing at a slower rate than costs; in some cases they are actually falling.

Thus while total dollar volume of bridge and highway work is going up, competition is so stiff that contractor prices—and probably contractor profits—are lagging or dropping.

It is entirely possible that when some of the contractors who "starved" during the late 1959 slump get some work under their belts, the price-cutting trend may slow down. But it doesn't seem likely that it will reverse itself.

One thing is certain: Unless highway contractors either raise their prices or increase their productivity, or both, they are going to do more work and make less money in 1960 than in any recent year.

During the first three weeks of February road contracts averaged $70 million a week. This is 41% above the admittedly low rate of contract awards during January. More important, it's appreciably higher than the award rate for the same period last year 22% more than the first three weeks of February 1959 and 31% above the weekly rate for the full month.

And there is lots more work on the way. By the end of this year, the total volume should be far ahead of that for 1959. ENR has forecast a 17% jump in the total highway awards for 1960, and a 34% climb in bridge contracts (ENR Jan. 28. p. 55).

The totals to date are less than they were at this time last year, but this reflects a slow start in January. At the end of January, awards were lagging 18% for highways and 23% for bridges. The big push in early February has cut the lag to only 4% for highways and 8% for bridges.

Bid advertisements in the last two

Into Bridge Clearance Confusion

Mr. Chacey indicated that Defense planners were extremely cost-conscious throughout their consideration of higher clearances. But, he said, the decision was not delayed by any apprehension that Defense would be called on to pay the bill.

Nearly 18 months of unhurried and thorough liaison and consultation preceded the original 17-ft decision formally presented on Oct. 1. Transportation experts in Defense had long worried about the adequacy of the 14-ft clearance, which the military had approved as late as Oct. 1, 1957 (ENR Nov. 12, 1959, p. 25).

But as the highway program developed, so did missiles and their size—ICBMs introduced new problems. These big missiles must move over highways. But Interstate construction was boxing in the nation's highway system by building what Mr. Chacey described as "a Chinese wall without gates." The gates are being closed, he said, by constructing low-clearance bridges over crossroads as well as over the Interstate highways themselves. This seriously restricts the bypass possibilities of the nation's highway net for big missiles and other outsize defense loads.

That's why the Army Chief of Transportation ordered an all-service re-evaluation of 14-ft Interstate clearances nearly 24 months ago.

Bridges Still Bargain as Volume Rises

to three weeks point to a continually increasing volume of work in March. For example, within the next four weeks in just nine states, bids will be opened on jobs totaling almost $100 million. Biggest of these are California, $37 million; Michigan, $21 million; New York, $18 million; Florida, $11.3 million. In addition, New York's Triborough Bridge and Tunnel Authority will take bids on the multi-million-dollar towers for the Narrows Bridge.

In the past, contractors have not capitalized on an increase in work volume. They have been holding their prices down. Since the beginning of 1957, a peak year for highway and bridge contracts, contractors' bid prices have been lower than engineers' estimates. Bid prices on federal-aid jobs in the fourth quarter of 1959 were about the same as for the previous nine months, but 2.4% below the previous year and 3.6% below the late 1957 summit according to the Composite Mile Bid Price Index compiled by the Bureau of Public Roads.

In some states, such as California, South Dakota and New York, the bidding trend is even now continuing downward, and the contractors are putting themselves in a price squeeze. In Colorado, Florida and Idaho the bid prices have moved up, but contractors are moving further afield geographically to maintain their volume.

If prices in these states continue upward, "outsiders" will move in and increase competition.

During the last quarter of 1959, the number of bidders per project increased in eight of nine states surveyed by ENR. South Dakota topped the list with 11.1 bidders per job. Nevada followed with 9.5 bidders. Washington and New York had 8.2 and 8.0 respectively. Colorado, the one state that showed a decline in the number of bidders, still had 8.8 bidders. Its previous high was 9.9.

The increase in competition had a depressing effect on bid prices. In every state reporting, the bid prices for the last quarter of 1959 were below the previous high (see table below). The reductions range from 0.2% in Florida, which is enjoying a defense boom, to 30.5% in Idaho. The national average was down 3.6% from the all-time high in the fourth quarter of 1957. Only in Colorado, Idaho, Florida and Nevada were bid prices above those of a year ago, and only in Nevada was the increase considerable.

In the other reporting states the dip ranged from 1.2% in Oregon to 8.9% in South Dakota.

Highway Bidding Trends

Reported by state highway departments

Bid Prices (1949 = 100)

How the First Quarter '59 Compares with . . .

Contractor Competition

Average Bidders Per Project

State	4th Quarter	previous quarter %	year ago %	previous high %	1958 Q1	1958 Q2	1958 Q3	1958 Q4	1959 Q1	1959 Q2	1959 Q3	1959 Q4
California	120.1	−12.0	− 3.9	−15.4 (Q1 '57)	9.3	5.4	5.5	6.3	8.2	6.3	6.7	7.1
Colorado	93.0	+ 4.1	+ 0.3	−11.8 (Q2 '57)	9.9	8.6	8.4	9.6	9.5	7.5	9.9	8.8
Florida	146.2	+ 9.9	+ 4.6	− 0.2 (Q3 '58)	7.1	5.5	5.0	5.9	5.3	5.3	5.3	6.5
Idaho (1950 = 100)	99.6	+28.5	+10.1	−30.5 (Q3 '57)	7.1	7.5	5.3	7.0	7.1	4.3	4.6	5.9
Nevada (1955 = 100)	106.2	+ 0.5	+ 2.8	−18.6 (Q2 '57)	8.8	6.6	5.7	7.1	5.7	5.0	6.6	9.5
New York	107.4	− 5.1	− 4.1	−24.2 (Q1 '56)	7.0	6.0	6.0	5.0	8.2	9.2	6.2	8.0
Oregon	95.4	+ 4.5	− 1.2	−14.2 (Q1 '59)	10.4	6.2	5.9	8.4	6.9	6.0	6.5	7.1
South Dakota	88.1	−11.3	− 8.9	−13.1 (Q2 '56)	10.0	5.8	6.8	6.4	6.9	8.5	9.7	11.1
Washington	91.1	− 0.8	− 5.4	−15.8 (Q2 '57)	9.1	6.0	4.9	8.0	9.8	5.7	4.7	8.2
US Composite*	112.8	+ 0.6	− 2.4	− 3.6 (Q4 '57)	—6.8—		—6.6—		—7.4—		—n.a.—	

* US Bureau Public Roads Composite Mile Index for federal-aid projects.

Mechanical Mole Sees Daylight

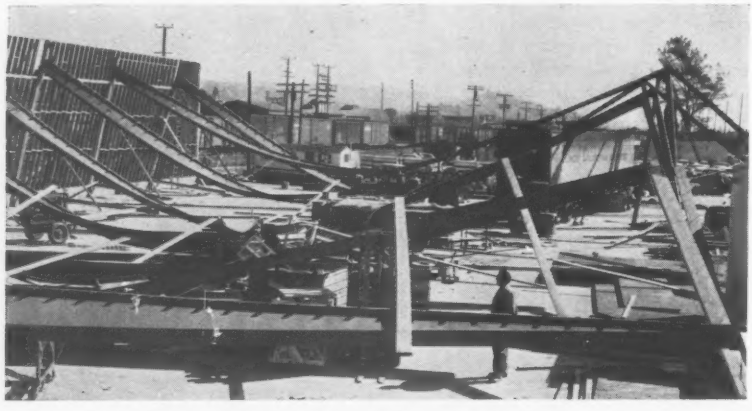
After working underground for a year at depths from 35 to 100 ft, a 60-ton mechanical mole has completed its first job—excavation of a trunk sewer for the new Humber River Sewage Treatment Plant in Toronto.

The machine drove a tunnel more than two miles long and about 11 ft in diameter in shale and limestone.

The tunneler has a 15-ton circular revolving head driven by two 200-hp electric motors. Cutting discs on the head chew up the tunnel face. The excavated material passes over the tunneler on a belt and empties into muck cars, (ENR Sept. 4, 1958, p. 39).

The tunnel was lined with reinforced concrete as the machine advanced. Concrete was lowered through shafts and placed pneumatically.

The machine was modified by the contractors, Foundation Co. of Canada, Ltd., Toronto, from equipment designed by the late James S. Robbins.



Poor Weld Caused Collapse

A temporary field weld, which a workman forgot to reweld into a structural joint, caused the Los Angeles girder collapse (ENR Feb. 11, p. 25).

That's the consensus of owner-builder Rudy Hehr and steel contractor Ross Carter. It confirms an earlier analysis of the collapse by structural engineer Lawrence Breinin.

Final damage estimate by the owner is $20,000. Replacement of the nine 96-ft span tapered steel girders will cost $13,000. Physical injuries to 40 ironworkers on the site were minor.

The welded joint that failed connected longitudinal sway bracing rods to a girder not, as ENR reported last week, to column clip angles. Sway bracing was continuous at top and bottom girder flanges. Anchored to footings at the ends of the building, it was in place when the girders buckled and fell.

The steel contractor is re-erecting the new girders using the same bracing system. The girders will support timber roof joists for a factory addition to the Hehr Manufacturing Co.

Pink Slip Ends Aswan Job For Western Consultants

Nasser and Khrushchev have apparently decided to remove all Western influence from the design of Aswan High Dam. Egypt's Middle East News Agency reports that the Egyptian High Dam Authority "is taking steps to cancel the contracts of international consultants who took part in tests, special studies and design of Sadd-el-Aali (the high dam) at Aswan."

The agency mentions no names, but the ousted group is understood to include the British firm of Sir Alexander Gibb & Partners—engaged only a few months ago to design the main dam and powerhouse—and all four members of the consulting board: I. C. Steele and L. G. Straub of the U. S.; Andre Coyne of France; and Max Pruess of Germany.

Karl Terzaghi of the U. S. resigned from the board last November.

A Soviet-Egyptian agreement to limit second-phase planning and design to Russian and Arab engineers is behind the dismissal, the news agency says.

Floating Bridge Pontoons Damaged for Third Time

Disaster struck a third time at the huge concrete pontoons that will make up a floating bridge over Washington State's Hood Canal.

Six of the 50 x 360-ft pontoons bolted together in place at the west side of the canal were damaged as their ends bumped against one another during periods of high winds and rough waters.

The hammering cracked the pontoons and chipped away concrete. There is no official estimate yet on the cost or delay.

As a result of the accident, the owner, the Washington State Toll Bridge Authority, and the contractor have engaged consultants to advise on "corrective measures."

The authority called in Ralph Tudor, San Francisco; John I. Parcel, St. Louis; and Howard, Needles, Tammen & Bergendoff, Kansas City.

The contractor—a combine made up of Morrison-Knudsen Co., Henry J. Kaiser Co., Puget Sound Bridge & Dredging Co., and General Construction Co.—engaged Parsons, Brinckerhoff, Quade & Douglas, New York City consultants.

Late in 1958 two pontoons sank in the Duwamish Waterway (ENR Jan. 8, 1959, p. 25) and only one could be reclaimed (ENR June 18, 1959, p. 44). In December two of the giant concrete pontoons collided in high winds, punching a hole in one of them (ENR Dec. 24, 1959, p. 13).

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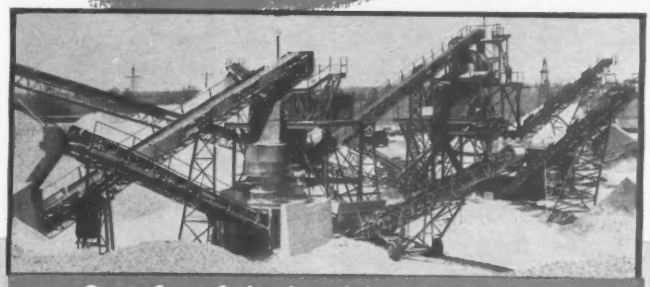
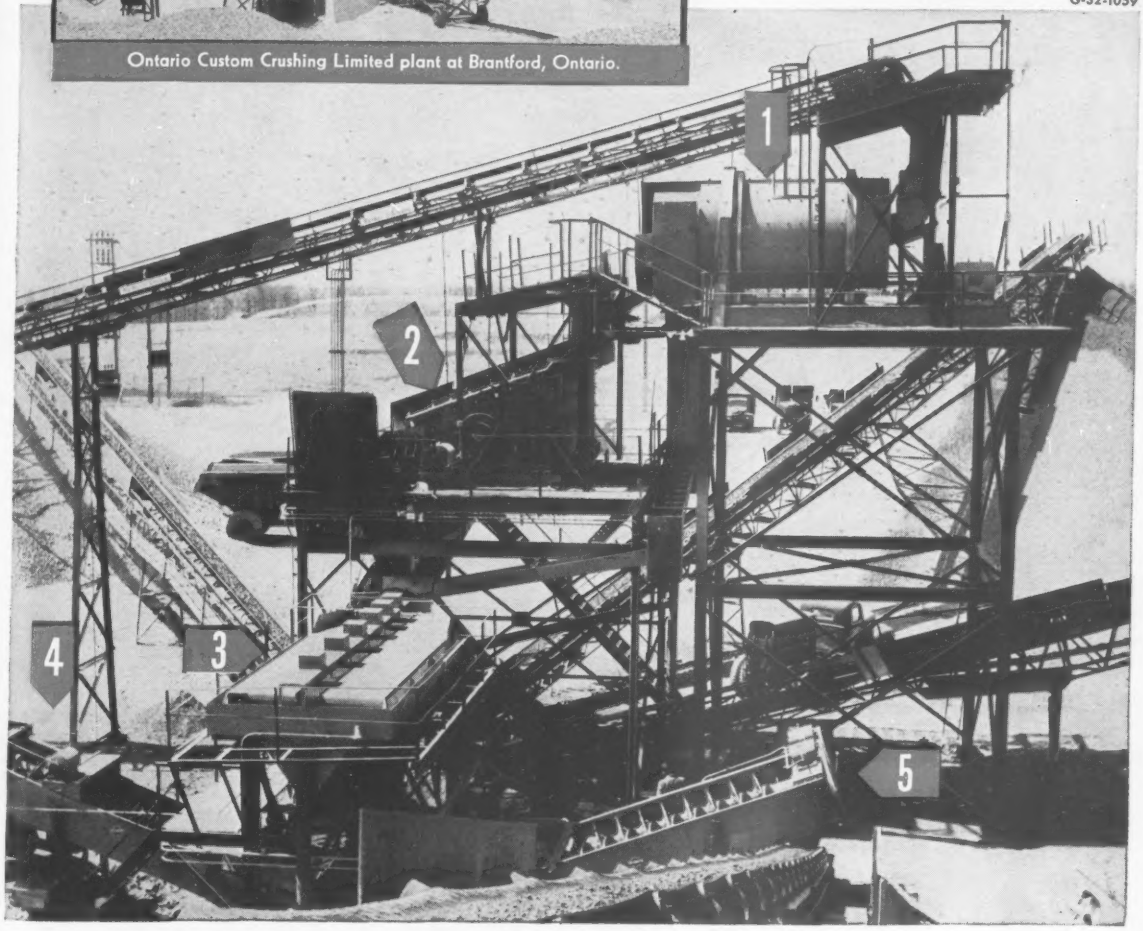


Ontario Custom Crushing Limited plant at Brantford, Ontario.

With its Washing Tower recently expanded, with additional Telsmith equipment (see 1, 3 and 5 below), Ontario Custom Crushing Limited, Brantford, Ontario, plant can produce aggregate *to meet even the most exacting specifications.* It had already proved its efficiency, and capacity, making all wanted sizes for construction. Equipment was furnished by Ontario Equipment & Supply, Ltd., Telsmith distributor, Toronto. Send for Bulletin 292.

(Below) WASHING TOWER — (1) 84"x12' Super-Scrubber. (2) Two 5'x12' Triple Deck Vibro-King Sizing Screens. (3) 10'x20' Dewatering and Classifying Tank. (4) 24"x19' Twin Screw Sand Classifier. (5) 30"x22' Twin Screw Sand Classifier.

G-32-1059



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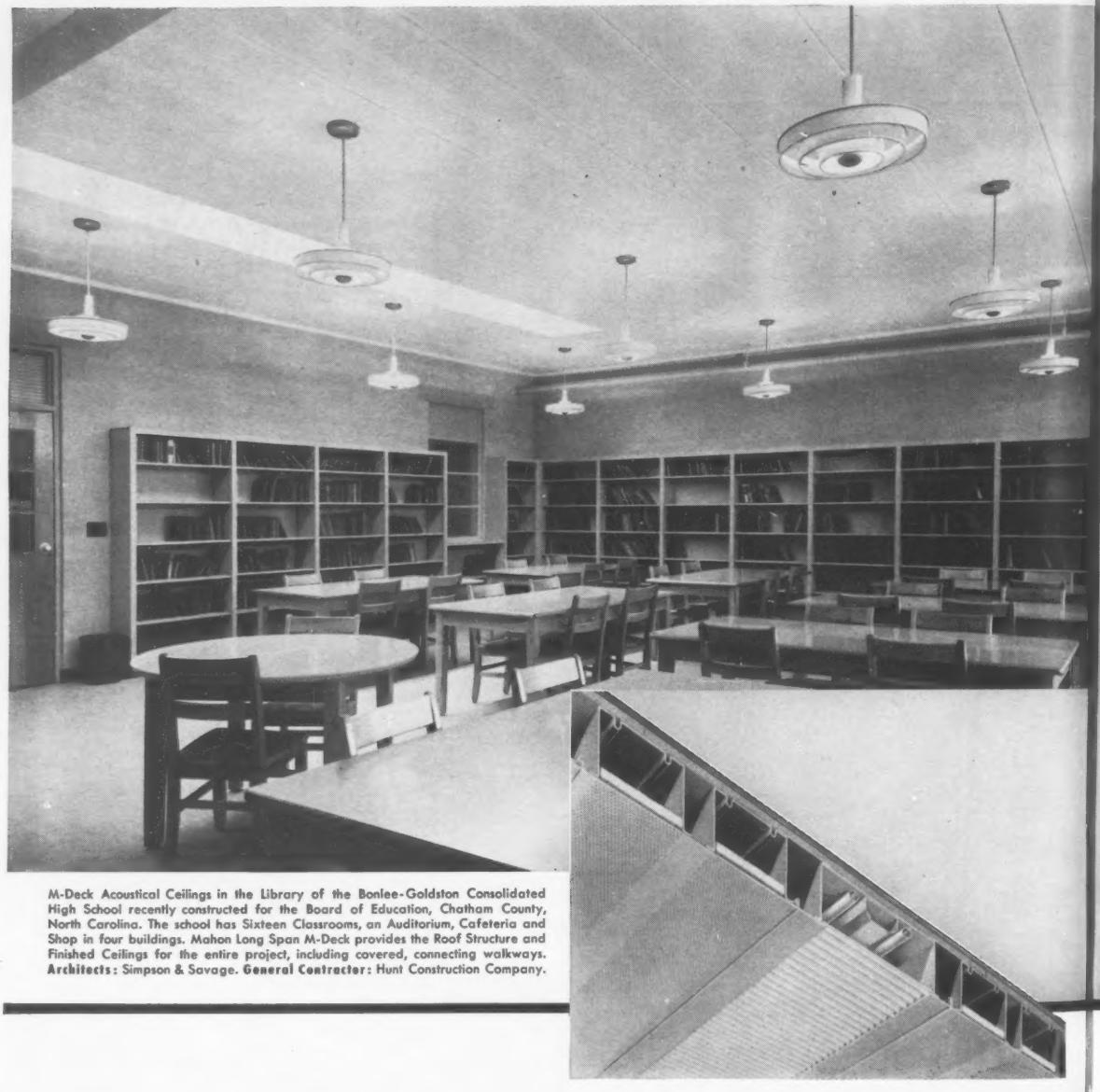

M-Deck Acoustical Ceilings in the Library of the Bonlee-Goldston Consolidated High School recently constructed for the Board of Education, Chatham County, North Carolina. The school has Sixteen Classrooms, an Auditorium, Cafeteria and Shop in four buildings. Mahon Long Span M-Deck provides the Roof Structure and Finished Ceilings for the entire project, including covered, connecting walkways. **Architects:** Simpson & Savage. **General Contractor:** Hunt Construction Company.

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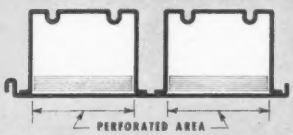
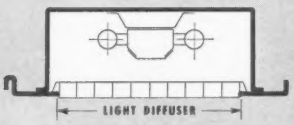


SECTION M2SR (Acoustical)
CEL-BEAM DEPTH 1½", 3", 4½", 6 or 7½"



SECTION M1T (Troffer)
DEPTH 6" or 7½"

SECTION M2 (Acoustical)
CEL-BEAM DEPTH 1½", 3", 4½", 6 or 7½"

At Left: Cross Section of Long Span M-Deck Combined Roof-Ceiling with Troffer Lighting.

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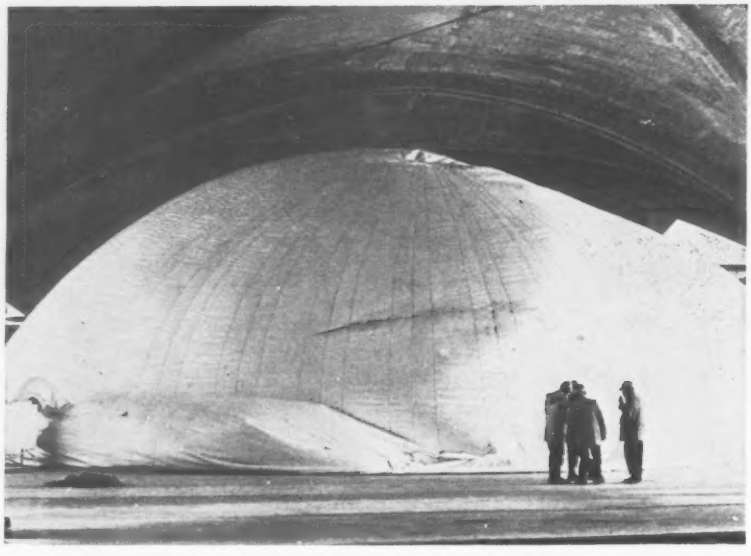


. . . Balloon for Interior Shelter

A giant nylon balloon is speeding winter construction operations in Project Turnkey, the nation's first mechanized post office at Providence, R. I. (ENR Jan. 14, p. 30).

The vinyl-covered balloon, 80 x 200 ft, will enable workmen to assemble and install electronic and mechanical equipment inside the roofed space. Four of the six intersecting barrel shell roof units, each framing an area 150 x 140 ft, are in place.

Maintained at an air pressure of ½ psi above atmospheric pressure, the balloon will stay until the exterior walls are completed. Trucks carrying equipment will enter the balloon through an air lock to avoid pressure loss. Portable heater-blowers maintain air pressure inside the balloon and heat the interior.

Nearly half the precast concrete wall panels are now in place. Laying of glass block, which encloses the space between the top of the precast panels at the edge rib spring lines and the edge rib soffits, began last week.

Casting of the two remaining shell roof units is scheduled for late March. The building should be enclosed by mid-May. September is the target date for project completion.

The general contractor on the post office construction is Gilbane Building Co., Inc. of Providence, R. I.

Peace-Columbia Snags

Development prospects for the two rivers are unclear

Reports out of Victoria, B. C., appear to cloud somewhat the future of the province's huge river development prospects.

British Columbia officials are not happy with proposals made so far for international development of the Columbia River and its tributaries. And a provincial legislator predicts that the Wenner-Gren group will abandon its $610-million plans to develop the Peace River (ENR Dec. 17, 1959, p. 45 and Dec. 24, 1959, p. 20).

The B. C. government does not entirely approve of any of the three Columbia Basin development schemes advanced by the International Joint Commission last spring, said B. C. Lands and Forests Minister Ray Williston. As a result, provincial officials last week took a new secret proposal to Ottawa where the U. S. and Canada resumed negotiations aimed at a Columbia development treaty.

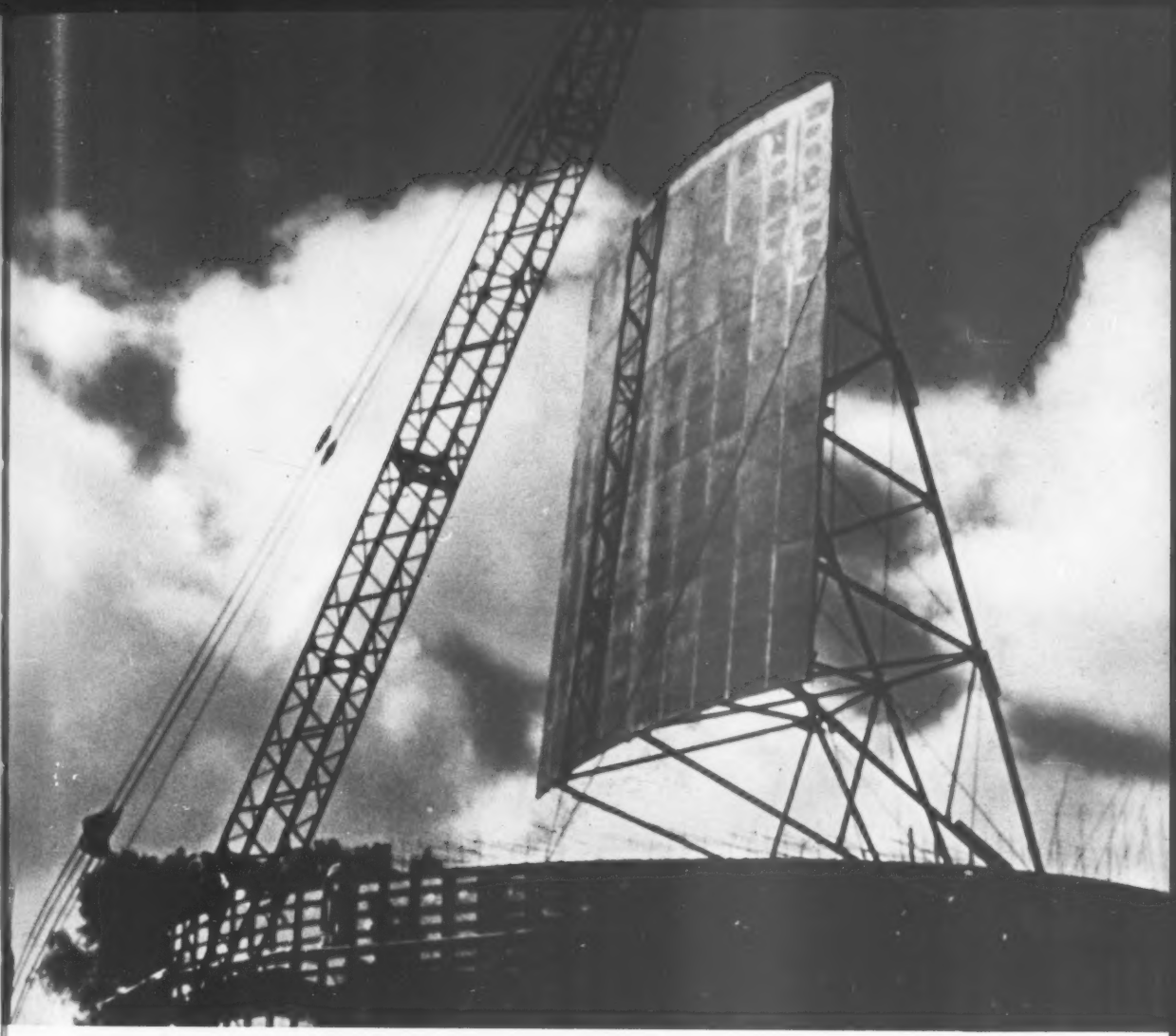
Two of the IJC schemes involved diversion of the Kootenai into the Columbia headwaters (ENR Mar. 26, 1959, p. 27). The diversion dam would be built at Copper Creek or Dorr, depending on which scheme was picked. The third plan called for Columbia and Kootenai development without diversion.

Peace River planning is not having clear sailing either. Political reaction against the scheme is reportedly growing in British Columbia. Liberal leader George Gregory told the provincial legislature that the Wenner-Gren interests will drop the project this year. Mr. Gregory said Premier W. C. Bennett will announce just before elections that the Peace River Development Co. (Wenner-Gren) won't be able to meet its commitments and will forfeit to the province a $500,000 performance bond plus surveys estimated at more than $5 million.

Gordon Shrum, chairman of British Columbia's new energy board, said he thinks Peace backers would have trouble interesting investors if Columbia development should go ahead at the same time.

ENR Index Ready

ENR's Index of Editorial Content for July-December 1959 has been mailed to those on the index mailing list. The index is free. Copies of 1958 are also available. Write: Indexing Department, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y.



4 Ton Ganged Section, 22 Ft. by 28 Ft. Used for . . .

28′ High Circular Walls of Sewage Plant

Friebel & Hartman, Shelby, Ohio contractor, was able to strip and reset 2,300 square feet of forms on the inside gang section in 3½ hours. A ¾ yard crane with an 80′ boom handled the sections. 8 men in less than 8 hours erected 2,300 square feet of forms and scaffolding on the outside, plus pouring the concrete. The project was the Mansfield, Ohio Sewage Treatment Plant, which consisted of four digestors, each 80 feet in diameter, 28 feet in height and 8 inches thick with no horizontal joints.

Four ganged sections were used—each 22 feet wide and 28 feet high. This allowed pouring ⅓ of a tank at a time, and a pour every four working days. Weight of each ganged form section was about four tons. By using three trusses to brace each ganged section contractor was able to hold bracing costs to a minimum.

Complete story on the Ohio Sewage Treatment Plant will be sent *free* upon request. Symons Steel-Ply Forms can be rented with purchase option.

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Construction progress on the Oneida Lake Bridge. Owner: State of New York Department of Public Works (C. F. Blanchard, Deputy Chief Engineer, Bridges). Engineers: Summers, Munninger and Malke, Albany, New York. General Contractor: All construction work performed by Terry Contracting, Inc., Long Island City, New York.

Nation's Longest Post-Tensioned Concrete Span

. . . another outstanding example of Ryerson post-tensioning service

The longest post-tensioned concrete bridge span in the nation—for that matter the longest in this hemisphere—is the 320-foot center span of the Oneida Lake Bridge now being built near Brewerton, New York.

The entire structure, extending 460 feet between abutments, contains 34 post-tensioned concrete girders—all cast on the job site. Two dozen are 146-foot cantilever girders, each weighing 240 tons . . . ten are 231-foot drop-in girders weighing 230 tons apiece.

The post-tensioning "package" of materials and equipment delivered to Terry by Ryerson included more than a thousand tendon and anchorage assemblies, each containing 12 to 28 ¼-inch cold drawn, stress relieved wires, plus stressing and grouting equipment—and 400 tons of fabricated re-bars.

Another unique feature of the bridge: it will be practically maintenance free because of its concrete girders, its stainless steel bearing plates and anchor bolts, and its aluminum railings.

This is just one more example of the growing use of post-tensioning for prestressed concrete construction . . . and of the growing reliance on Ryerson for post-tensioning materials, equipment and know-how.

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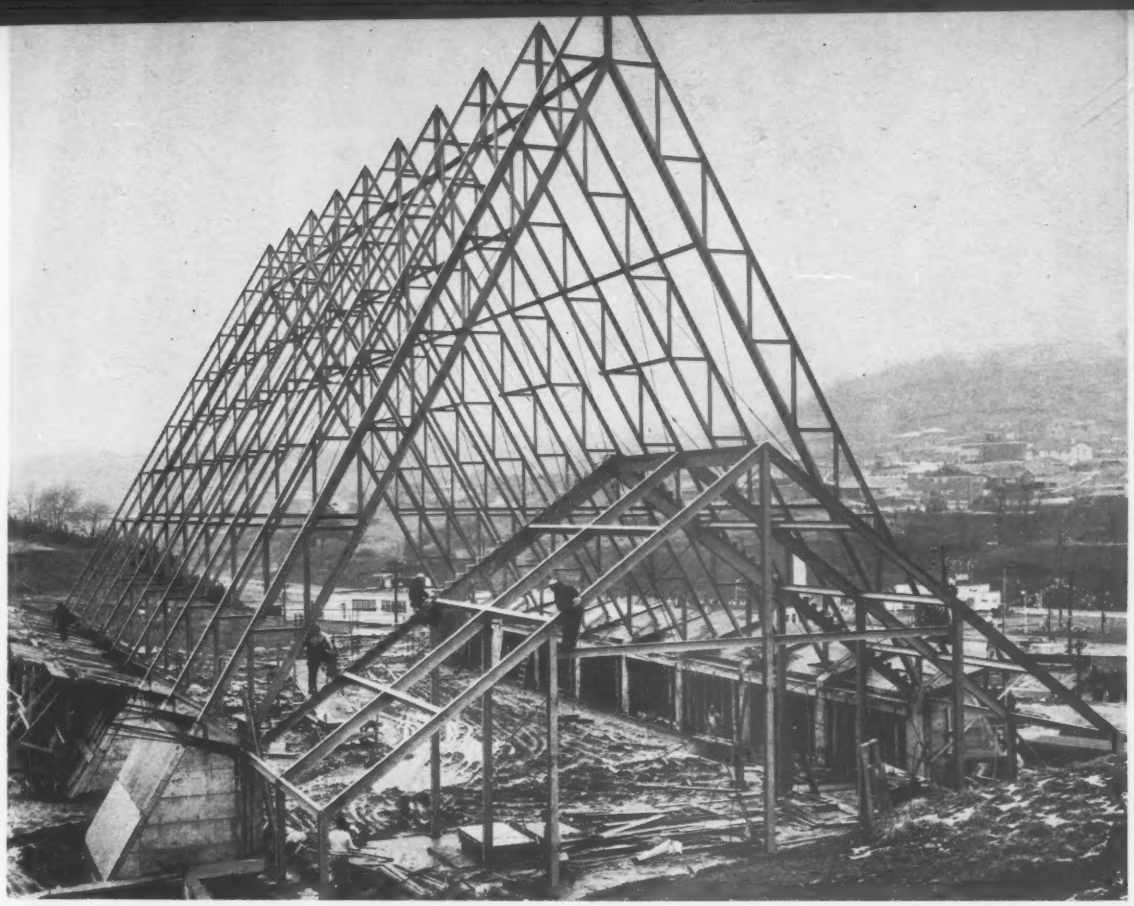


Metal Roof Forms Church Walls

How to design a church that will be distinctive despite its location behind the towering commercial signs of a shopping center—that was the problem confronting the architects for St. Sebastian's Church in North Hills, Pa., near Pittsburgh.

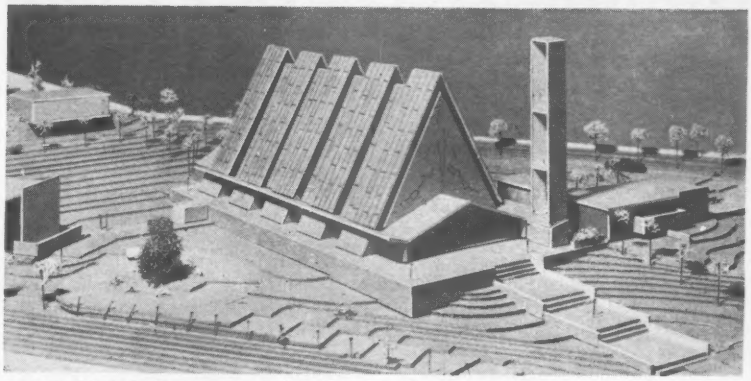
The solution is this structure, now under construction at a cost of more than $500,000. The building features a 77-ft-high roof on a base 200 ft long by 90 ft wide.

The roof literally acts as the building walls and offers an uncluttered area devoid of distracting pillars or supports. It consists of ten 75-ft fabricated steel trusses on each side.

Each of the 10 trusses is joined to its mate at the ridge with a single steel pin. They form a 60 deg angle to the horizontal.

During construction horizontal steel beams hold the trusses in place. After the cellular metal deck, which forms the structural roof, is applied, the steel beams will be removed. The deck acts as a diaphragm spanning between the trusses.

The roof skin will be baked enamel aluminum panels. The interior side of the deck, which will be painted, will form a finished fluted ceiling.



A 90-ft-high bell tower adjoins the church.

To save time and expense, the slabs that span every other pair of truss piers were precast in the field. Brick will cover the concrete piers.

A slab will be cast after heavy construction work is completed. There is no basement. The building will have both radiant and forced air heating systems.

The interior sidewalls will be 9 ft high. They are of stacked bond concrete block painted and highlighted by wood trim.

The church will seat 1,200 persons. A 90-foot steel and brick bell tower, adjoining the church, will house the baptistry.

Gerard & McDonald of Pittsburgh is architect engineer. Mellon-Stuart Co., also of Pittsburgh, is constructor.

New lift span floats into position between 200-ft towers of combination rail-highway bridge.

Double Deck Lift Span Challenges

Contractors on an $11-million lift-bridge in the upper peninsula of Michigan can say "well done" to a tough job. Several construction operations required forthright planning and bold execution. Notable for their complexity were three of the foundation piers and erection of the towers and lift span.

The 1,310-ft bridge spans Portage Canal between Houghton and Hancock. The 263-ft double-deck lift span is flanked on each side by a 120-ft tower span, a 115-ft simple deck span and three continuous deck spans varying in length from 85 to 115 ft.

Sinking the concrete caissons for the tower piers No. 5 and 6, and pier 4 was the toughest part of the foundation work. Here's how they did it:—

Sand hogs sank the 90x30x80 ft high tower pier caissons through 30 ft of coarse sand and 6 ft of fine sand and 40 ft of compact gravel.

Construction crews built a work-bridge on sand-filled cellular cofferdams out from the south shore to Piers 4 and 5, which are in deep water. Workmen then constructed sand islands at the three sites, through which the caissons were sunk.

For each caisson, concrete crews first placed a 10-ft high cutting edge of concrete; then a 4-ft layer and a 10-ft layer totaling 24 ft. Each caisson had five 10-ft-dia dredging wells.

Dredging crews sank each caisson 21 ft initially, leaving 3 ft above the sand island. Then they continued sinking them in 10-ft or 20-ft-increments as concrete was added to provide weight.

When the north caisson (Pier 6) got to within 3 ft of final elevation, it stuck. So much skin friction had been built up that it wouldn't budge even when dewatered to reduce buoyancy.

Sand hogs were called in and the caisson put under compressed air. It was under air for 13½ days. This time was cut to 7 hr for the south tower caisson (Pier 5).

Air domes were bolted to angles preset in the concrete faces of the dredging wells. Three shafts handled muck buckets. For the north caisson, one well with two tubes handled personnel. The fifth well was sealed. For the other two caissons, three wells handled the muck and two handled personnel.

Sand hogs worked under a maximum pressure of 38 psi, but most of the time under 35 psi. A work shift included 1.5 hr under air, 4.5 hr rest and 1.5 under air. This schedule was changed to 2-4-2 hr under 28 to 33 psi, and 3-3-3 hr under 24 to 28 psi.

A touch-and-go problem developed when bedrock was encountered near the bottom of Pier 4. Sand hogs and miners had to drill, blast and remove 130 cu yd from that caisson. Small charges of 60% gelatine powder, not more than 20 lb per round, were fired in 2-ft-deep holes spaced about 1 ft c-c. This caisson was under air for 14 days.

The contractor averaged 10 ft of forming, concreting and sinking a caisson per week. Sinking was on two 10-hour shifts, with other work on a single 10-hour shift per day. Maximum substructure crew totaled 170, including 80 sand hogs.

Concrete caissons for new bridge were sunk through sand islands; old bridge was later removed.

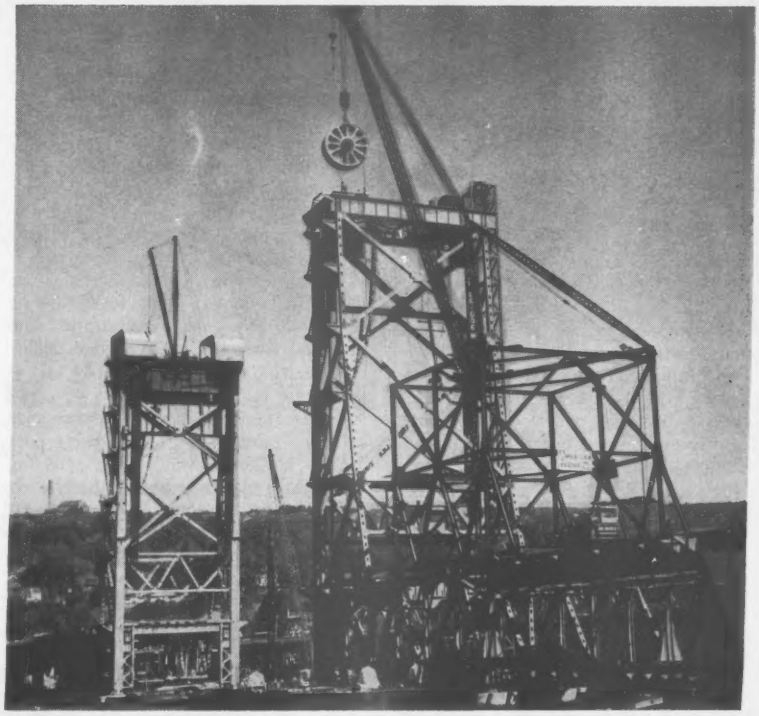
Builders

Two compressors furnished air. One delivered 1,100 cfm at 50 psi. The other, 600 cfm at 150 psi. Four cranes drove sheetpiling, dredged caissons for sinking, and drove steel bearing piles for the north approach piers.

After a caisson had been founded at design elevation, engineers went down and inspected it. Concrete crews then placed an 8-ft seal of tremie concrete in the bottom of the caisson and capped it with a 6-ft or 8-ft thick reinforced concrete cap. Each of the two big caissons contained 4,600 cu yd of transit mix concrete.

It took a tall tower derrick plus a lot of know how to erect the 200-ft lift towers. Erection crews performed the job without a hitch, under the supervision of G. W. (Tex) Twining, construction superintendent for the American Bridge Division of U. S. Steel Corp., which held a $6-million contract for towers and superstructure.

Twining's crew erected both lift towers with one 150-ton derrick. It had a 60-ft tower, 130-ft boom and 25-ft jib. It was rigged with 3,050 ft



Contractor used derrick to erect towers and lift mechanism.

of wire rope for the topping lift; 1,700 ft of rope for the main load line; and 1,160 ft of rope for the outrigger—all operated by a three-drum hoist.

Steel crews first erected Span 8, adjoining the north tower span, by use of a crawler crane operating on the canal bank. Riggers and iron workers then assembled the tower derrick on the south end of Span 8. From this position, the derrick erected the deck trusses and floor system of the north tower span (Span 7).

Workmen then skidded the derrick to the middle of Span 7, for erecting the tower. They followed the same general procedure in erecting the other tower, except that the water was deep enough to permit floating the 550-ton south tower span into place. This was a more economical procedure than was used for the north tower span since no falsework was needed.

As each tower was completed, erection crews assembled a 60-ft boom guy derrick on top. Each derrick was rigged with a 21-part boom falls and a nine-part load falls of 1-in. wire rope leading to a three-drum hoist on the roadway. Later, these derricks erected the 55-ton sheaves and other machinery that operate the lift span, and helped transfer the lift span from barges to towers.

While the towers were being erected, American Bridge crews tackled the tricky job of assembling the 263-ft lift span on two barges about 1,000 yards from the bridge site.

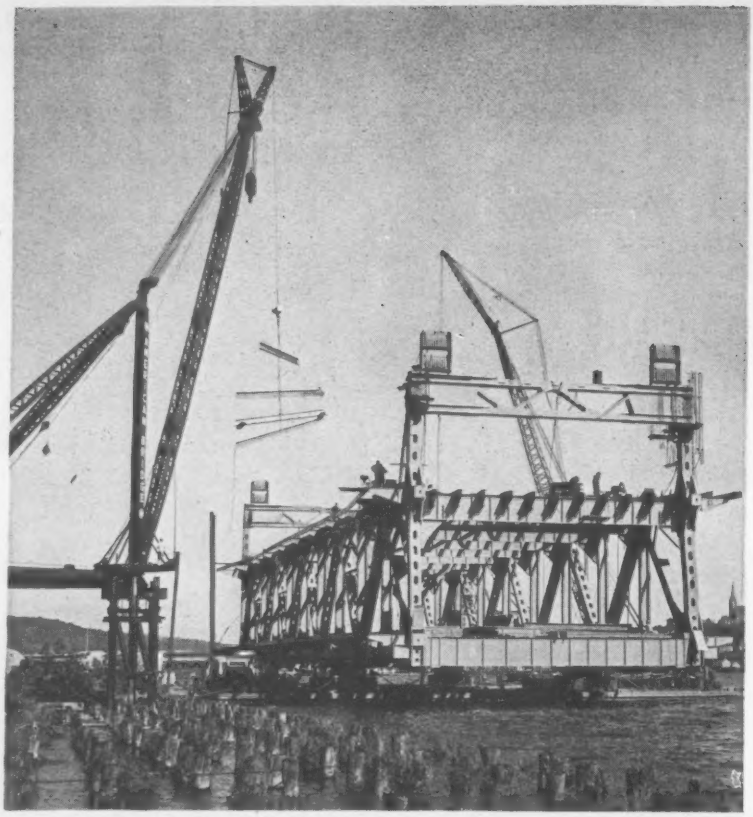
Bridge crews used two cranes and a stiffleg derrick to assemble the lift span. They used the derrick, which was supported by pile clusters several feet above the canal bank, to erect the truss members. A crawler crane fed it with structural material from railroad cars on an adjacent siding. Roadway stringers and floor beams and floor grating were set with a barge-mounted crane.

Balance was the big problem in erecting the lift span on the 120x40x9 ft barges. Twining used a 40-man crew for this operation, including three four-man riveting gangs.

Beginning at the far side of one barge, iron workers erected truss sections across the width of the barge, cantilevering them out to a small temporary barge, then on to the second barge.

Tow boats floated the 1,750-ton lift span into position at the bridge site. There, the big problem was to connect it to the four counterweights on the towers. Once the span was transferred from barges to lifting ropes, the rest was easy.

The four counterweights weighed more than the assembled span. Workmen first had to free the locking pins, since the counterweights had been locked in position near the top of the towers. Here's how they did it:



HALF A MILE AWAY from the bridge site, American Bridge crews completed the tricky job of assembling the riveted, 263-ft lift span on two barges.

After the tugs had positioned the barges and lift span between the towers, workmen attached the four corners of the lift span to the tower lifting falls. Two 15-ton pontoons on the floor steel were each filled with 35 tons of water ballast. This added weight raised the counterweights sufficiently to release the locking pins.

After workmen had permanently connected the lift span to its lifting ropes, the pontoons were emptied and removed from the lower bridge deck.

Operation of the lift span is as unique as its design.

Bridge tenders operate the lift span in three positions. In the lowest position it clears the water only 7 ft, but lets small pleasure craft through. In this position the lower deck carries rail traffic only; the upper deck carries pedestrian and highway traffic.

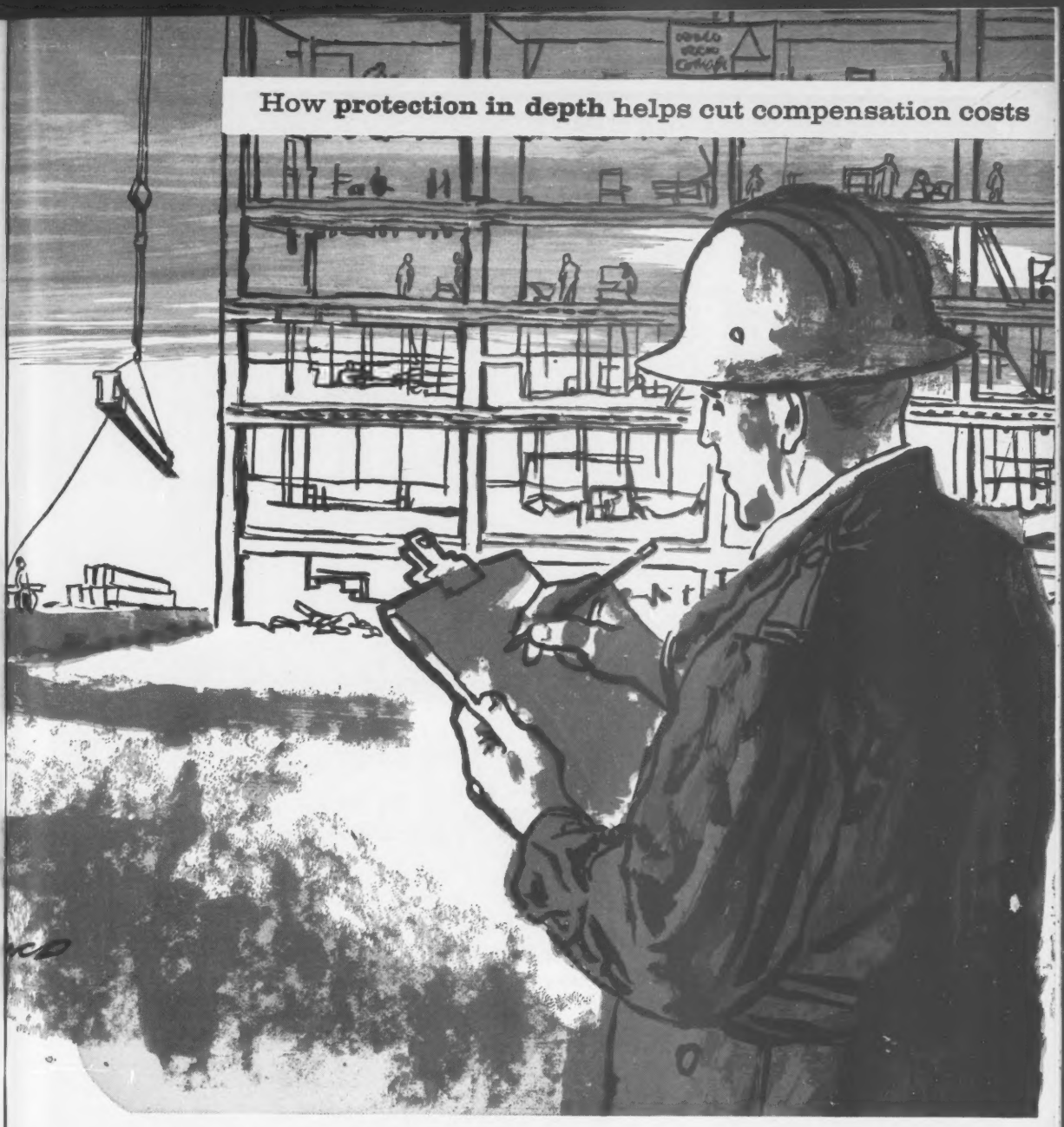
In the second position the double deck span is raised 25 ft, providing 32 ft clearance for larger pleasure craft. In this position, only highway and pedestrian traffic use the lower deck, which is flush with elevated approach spans on each side.

In the third position, bridge tenders raise the span to give 100 ft clearance above the water for the passage of the largest ore boats. The completed lift span weighs 2,250 tons.

The $11-million bridge was opened to traffic last December, almost two years after construction was started. It carries two 26-ft roadways separated by a 2-ft median, and two 7-ft sidewalks. Splash plates, set 2 ft back from the curbs, provide a 5-ft walkway.

Concrete for the roadway deck and sidewalks was delivered by transit mix trucks and placed in the forms with motorized buggies. Instead of conventional timber forms for supporting the concrete, the contractor used special 22-ga galvanized corrugated sheeting. It was tack-welded to continuous Z-shaped supporting bars, which were welded to the top flanges of the roadway stringers.

Al Johnson Construction Co. held a $4-million contract for the substructure. C. F. Woods was Johnson's project manager. Hazelet & Erdal, Chicago consulting engineers, designed and supervised construction for the Michigan State Highway Department. T. R. Wiseman was resident engineer for the consultant and L. H. Gilroy represented the highway department.



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Citizens State Bank, Oklahoma City, Oklahoma. Three Ceco products were used to help achieve a dramatic architectural effect here. The products were Reinforcing Steel, Wire Mesh and Open-Web Steel Joists. Architect: Bailey-Bozalis-Dickson and Roloff; Contractor: Secor Building Company, Incorporated.

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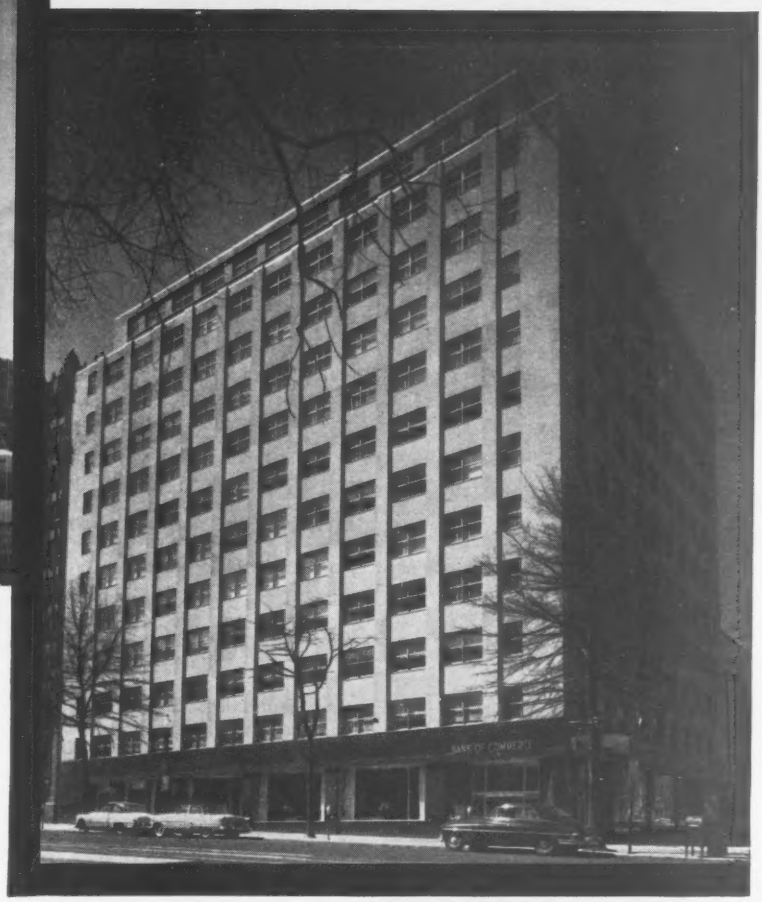
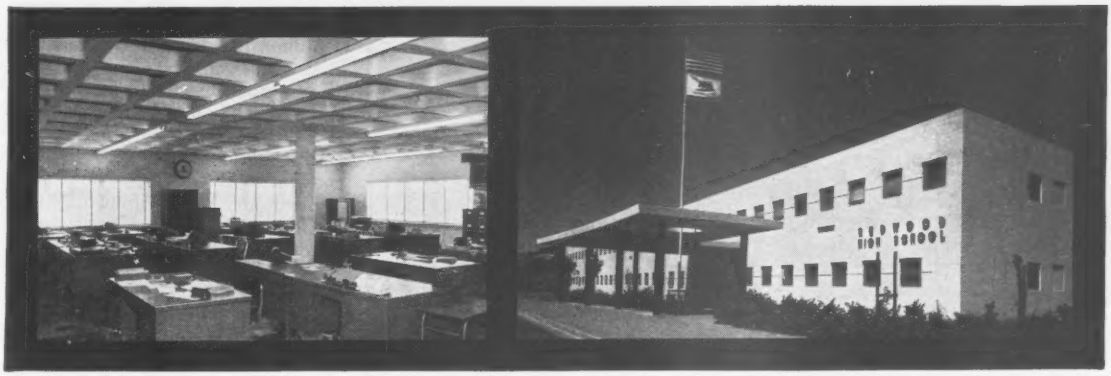
HERE ARE **2** ARCHITECTURAL EFFECTS ACHIEVED IN BANK BUILDINGS THROUGH USE OF CECO PRODUCTS



Bank of Commerce, Washington, D.C. This is an example of concrete joist construction through use of Ceco Steelforms. Concrete was reinforced with Ceco Rebars. Ceco 200-B Aluminum Double-Hung Windows provide adequate daylighting and weathertight protection. Architect: Corning & Moore; Contractor: Standard Construction Company, Inc.

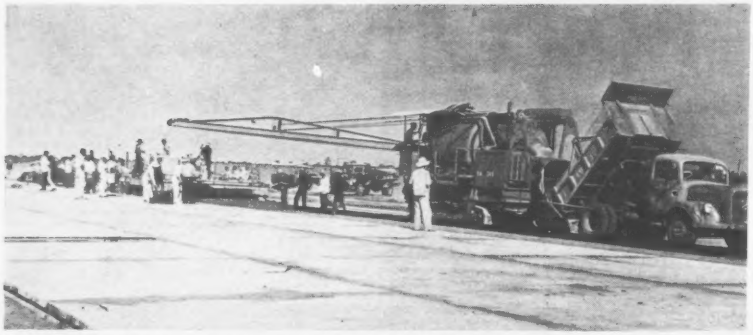


Ellis Truck Terminal, Indianapolis. Exposed waffle ceiling created with Steeldomes. Other Ceco products: Aluminum and Steel Windows, Hollow-Metal Doors, Steel Joists, Steel Roof Deck, Reinforcing Steel and Welded Wire Fabric. Architect: Monical & Wolverton; Contractor: Bugher Construction Co.

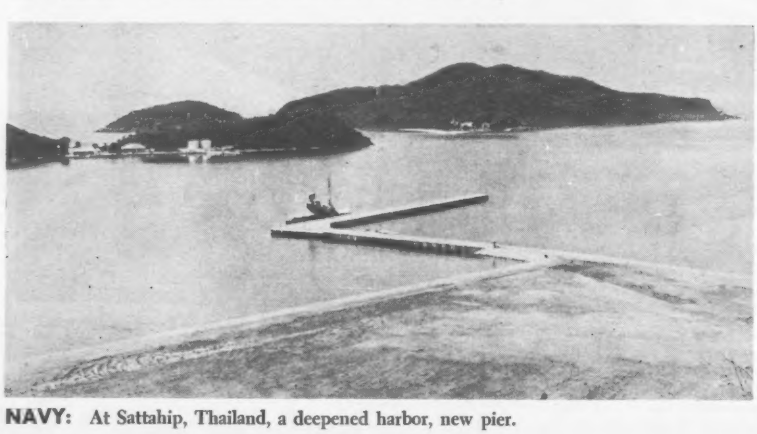
Redwood High School, Larkspur-Corte Madera Area, Marin County, California. In this handsome school building the architectural needs were met by four Ceco products: Reinforcing Steel Bars, Open-Web Steel Joists, Cecor Centering and Ceco Metal Windows. Architect: Gromme, Mulvin & Priestley; Contractor: Midstate Construction Co.

ARMY: Where there was jungle, there are now barracks and training facilities plus an adjacent community for dependents.

In Southeast Asia: U.S. Dollars



AIR FORCE: Five Thai airbases now have concrete runways.



NAVY: At Sattahip, Thailand, a deepened harbor, new pier.

A $55-million U. S. military assistance construction program in Southeast Asia is now nearly 85% complete. Projects include training centers, air fields, supply depots and naval bases in Thailand, Laos, South Vietnam and Cambodia, the four non-Communist countries south of Red China.

The individual jobs involved are not particularly complex. But over the four-year construction period, politics and logistics have complicated administration and engineering. The jobs are widely scattered, and several agencies are involved in each country.

Administration of the program begins in Washington, where the money originates. Financing comes from U. S. government aid funds plus currency generated through commodity sales by the recipient governments. Responsible for construction is the U. S. Navy's Bureau of Yards and Docks through its Officer in Charge of Construction at Bangkok, Thailand, headquarters of the Southeast Asia Treaty Organization (SEATO).

In three of the countries the construction program was developed by U. S. Military Advisory Groups working with local defense officials. The one exception is Laos; there the Ministry of Defense worked with the U. S. State Department.

But in all four countries project management has been handled in various de-

Build Bases

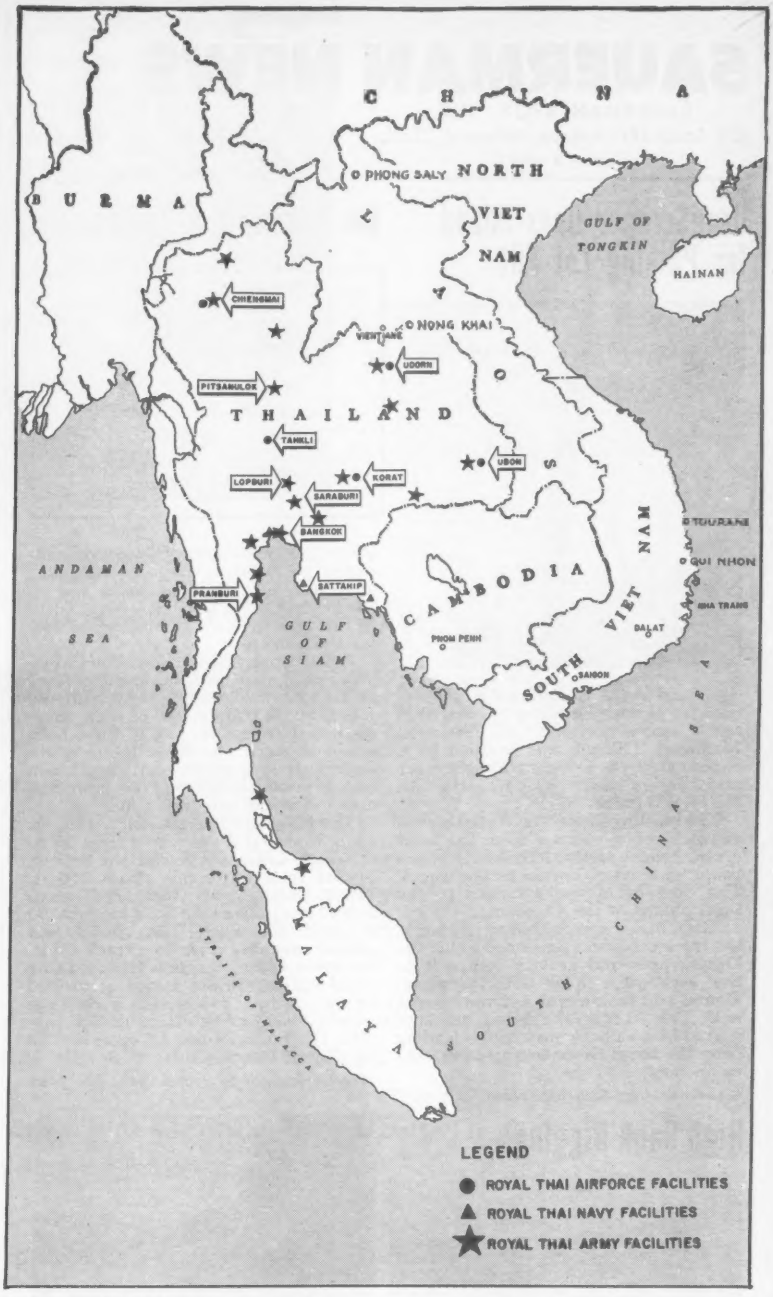
grees by Tippetts-Abbett-McCarthy-Stratton, New York City engineers-architects, under a lump-sum contract with BuDocks.

As consulting engineer on the project, TAMS has been doing different things in different countries: TAMS engineers have been technical advisors, designers, construction supervisors, project managers, instructors in construction methods and to a limited degree assistants in the management of local general contracting companies.

Although many of the projects appeared simple, none proved easy. Typical of the problems was a very simple government building in Laos.

Before this construction could even begin cement and other materials had to be brought from Bangkok across Thailand to the city of Nong Khai in northeast Thailand; then by truck to a ferry crossing the Mekong River to the city of Thadeau; then by truck into Vientiane; then to north Laos by small plane, which had to land on a dirt runway unusable when it rained; then by jeep to a river; then down the river by raft; then by hand to the site at Phong Saly, near the frontier.

Not all work was that difficult, of course, but even in Thailand, the largest and most developed of the four countries, there was not a single construction contractor capable of work of this scale when the program began. Thus part of the job has been organizing local construction firms.



MOST PROJECTS are in Thailand; some in Laos, Cambodia, South Vietnam.

One problem of developing qualified contractors was the prevailing attitude in the area toward the nature of a contract. It was regarded as a commodity to be sold and resold until it finally lands with the organization that will do the work—each middleman, of course, takes a profit of the sale. That practice was not tolerated, but before it could be licked some unlikely organizations found themselves in the construction business.

One of the major construction contractors in Thailand today is Sakol-Sathapat, which was a liquor distiller before it expanded into the general construction field by becoming low bidder on a large contract.

Another newly developed firm is Steeg & Associates, which became Thailand's first qualified earthmoving

(Advertisement)

SAUERMAN NEWS briefs

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DragScraper Uses Island for Parking Lot Fill

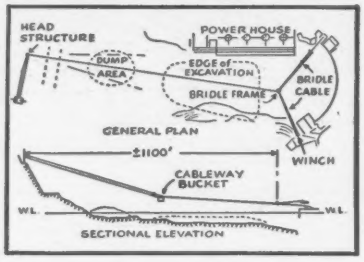
An island in the Kalamazoo River was used for parking lot fill by the Harrington Construction Co. of Fennville, Michigan. The job was handled by a Sauerman 3-yd. Crescent DragScraper and carrier assembly used with an Insley WB crane.

The hoisting line of the Insley served as track cable, running from the hoist drum through the middle sheave of the boom tip to a tree anchor on the island. The drag cable was attached to the front chains of the Crescent.

After digging and hauling to bank, the track cable was tensioned to lift the DragScraper and gravity return it to the excavation over 400 ft. away. Round trip took about a minute and a half. The 70-ft. crane boom was supported by two back stay cables leading from the boom tip to two tractors used as anchors.

(Condensed from Sauerman News No. 149.)

De-Rocking a Tailrace



When the Washington Power Co. completed its Cabinet Gorge power plant and dam, an accumulation of rock at the discharge of the draft tubes had to be removed to insure unobstructed flow for the tailrace.

A Sauerman 2½-yd. Slackline Cableway, equipped with a rapid-shifting bridle system, was selected to do the job. Over 28,000 cu.yds. of rock varying in size from 6 in. to 5 ft. have been removed since the Slackline was installed. It is a permanent installation and is used periodically to clear the area in front of the draft tubes.

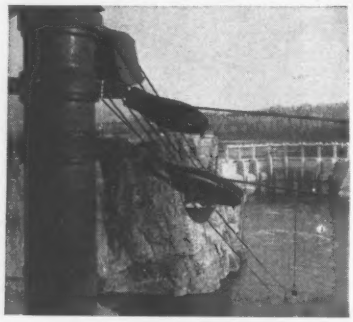
The Slackline operates on a 1000-ft. span. Materiai is excavated from 35 ft. of water and conveyed in the 2½-yd. bucket to a waste pile about 150 ft. below the tubular steel head mast. Power is supplied by a hoist located 190 ft. from the mast. The bucket and carrier assembly rides on a track cable, the lower end of which is attached to a rapid-shifting bridle frame controlled by a 10-hp. motorized spool-type winch. The rapid-shifting device permits the bucket's line of operation to be shifted laterally.

(Condensed from Sauerman News No. 143.)

High Bank Digging

DragScraper works on face of 175-ft. bank, hauls load 600 ft. Rapid Shifting Tail Bridle changes line of operation.

(Condensed from Sauerman News No. 150.)



MORE NEWS AND INFORMATION

Issues of Sauerman News giving greater detail about the installations on this page are available on request. For full information, tell us your interest or requirements and ask for catalog. Contact Sauerman Bros., Inc., 632 S. 28th Ave., Bellwood, Ill.

. . . Southeast Asia bases

contractor after buying a considerable amount of U.S. surplus earthmoving equipment in Japan.

Here is a country-by-country rundown on what U.S. money and local counterpart funds have bought.

In Laos, it has been design and construction of barracks and supply depots. A study has been made for an airport to be built near the city of Vientiane, capital of Laos. It's now under design by the TAMS engineers. The existing airport for Vientiane, unsurfaced and sometimes flooded by the Mekong River, is the main port of entry to Laos; there are no railroad or highway connections with any other country. Laos is separated from Thailand by the Mekong River, which, although one of the great rivers of the world, has not a single man-made structure crossing it—no bridges, and no dams.

In all, some $3.5 million worth of construction has been planned, designed and executed in Laos. The Vientiane Airport will cost $1.5 million more.

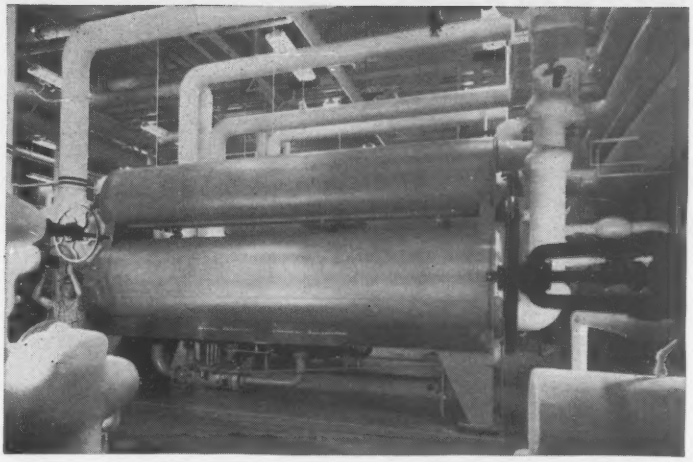
In South Vietnam, several million dollars has been spent on, among other things, a 250-bed hospital at Qui Nhon; the National Military Academy at Dalat; a naval base at Tourane; and airport improvements throughout the country.

Eight TAMS engineers are assigned to work under a U.S. Corps of Engineers officer who coordinates the design and construction program for the military assistance group. Engineers from the South Vietnamese Army did most of the detailed design work and also awarded the construction contracts.

The Cambodian program is similar to that of South Vietnam. TAMS engineers work directly under a Corps of Engineers officer. Here again the program includes training native army engineers in development of standard facilities for Cambodian military forces. The projects included a regimental training center; two naval bases; and a major ordnance depot and motor pool carved out of the jungle 20 miles from Pnom Penh. About $6 million worth of construction is going into Cambodia.

Thailand, the SEATO country, is getting the bulk of the U.S. military construction aid.

For the Royal Thai Air Force there are five new jet airports: Tahkli is a single concrete runway with parallel taxiway, aircraft parking aprons and a POL storage and distribution system; Korat is similar to Tahkli, and since it is at one of the largest cities of Thailand this airfield will also be used by civilian aircraft; Ubon, Udorn and Chiengmai are three airfields in the north of Thailand that were formerly civilian airports with gravel surface runways. These fields have now been improved with



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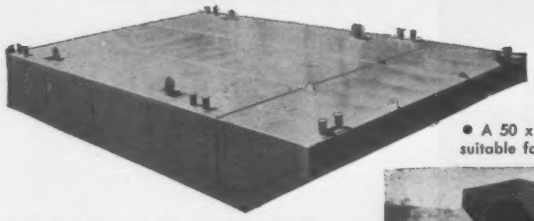
SECTIONAL BARGES



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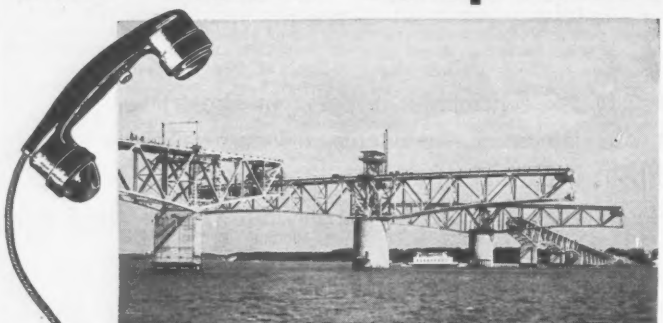

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. . . Southeast Asia bases

single concrete runways and will be used jointly by civil and military aircraft.

All runways were designed with 12½-ft or 25-ft paving lanes so local contractors could utilize their equipment on future highway paving in Thailand.

About $12.5 million has been spent on the five airfields.

For the Royal Thai Army, some $5 million was spent for developing a training center at Pranburi, virtually a new city for 25,000 persons.

The Thai Army has also constructed and improved facilities at about 40 training centers and schools scattered throughout the country.

For the Thai Navy at Sattahip, the U.S.-Dutch combine of Gahagan and Amsterdamsche-Ballast has dredged and deepened the harbor. The spoil was deposited behind a seawall to make 35 acres of waterfront storage area.

TAMS designed and supervised all work in Thailand for BuDocks. The consulting firm's staff for Thailand consisted of 24 Americans and 60 Thai civilian engineers during the peak load of the work. In addition, 40 Thai military officers were assigned to the U.S. Navy's Officer in Charge of Construction for training. He, in turn, coordinated their work with TAMS.

BuDocks first Officer in Charge of Construction was Capt. Garland M. Inscoe, CEC, USN, who was with the program for its first 18 months. He was succeeded by Capt. John A. Clark, who helped solve many of the contractors' problems during the early construction phases. After a year, Capt. Clark was succeeded by Capt. Edward B. Hickey, who has seen most of the major projects of the program through to near completion. Capt. James A. Bollinger recently succeeded Captain Hickey.

The Director of the Pacific Division of the Bureau of Yards and Docks, to whom the program's Officer in Charge of Construction reported, was Rear Admiral Joseph E. Jelley. Admiral Jelley, now retired, was succeeded by Admiral Wallace B. Short; who in turn was succeeded by Rear Adm. Henry G. Clark.

Reclamation Bureau Plans Anti-Evaporation Tests

The Bureau of Reclamation is planning new tests to determine whether a mono-molecular film can be applied to large reservoirs to prevent evaporation. The new tests will be undertaken at Lake Mead, the reservoir behind Hoover Dam, and Lake Sahuaro, the reservoir behind Stewart Mountain Dam on the Salt River.

The tests planned now are preliminary to a large-scale research project at Lake Sahuaro next summer.

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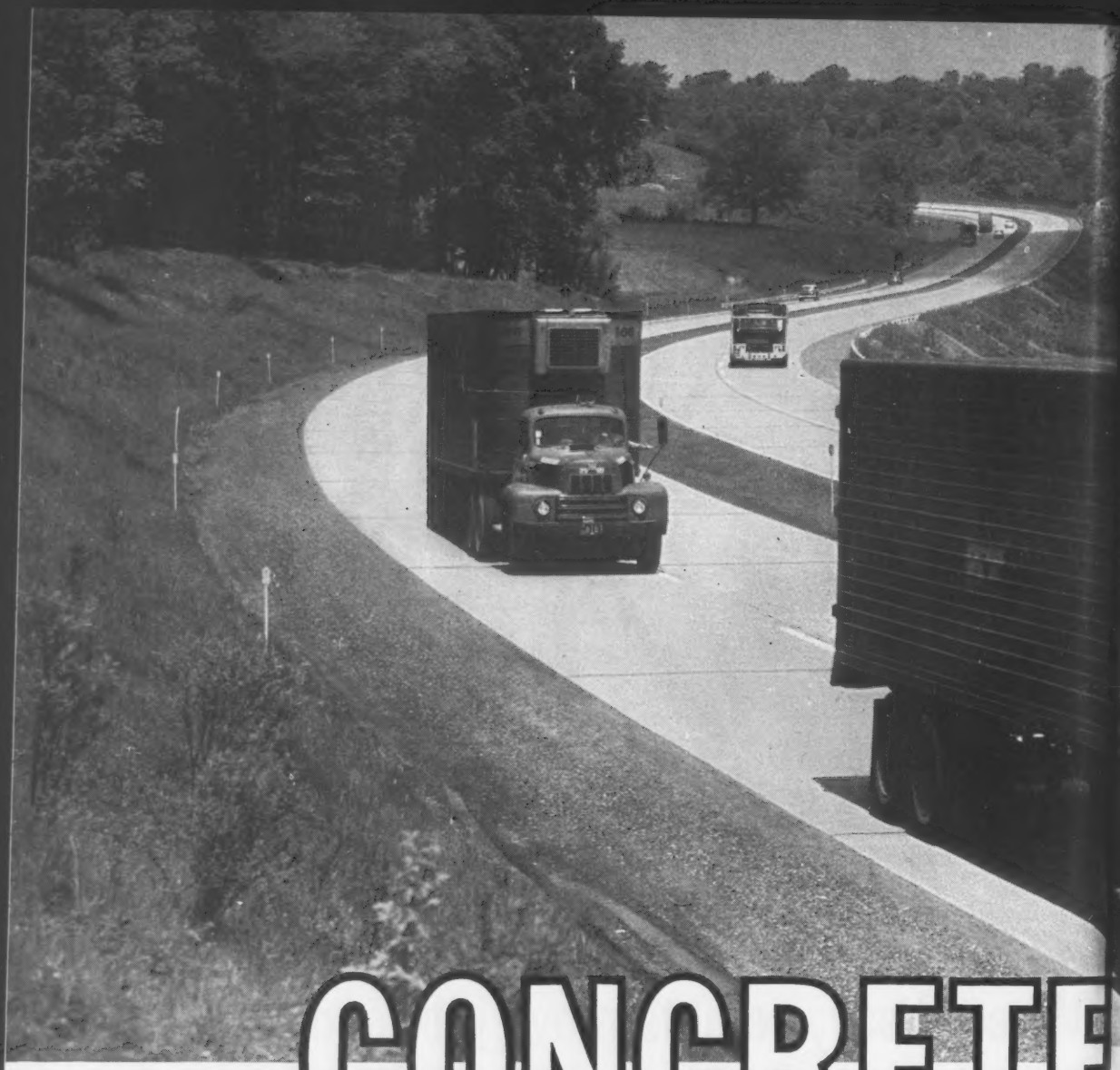
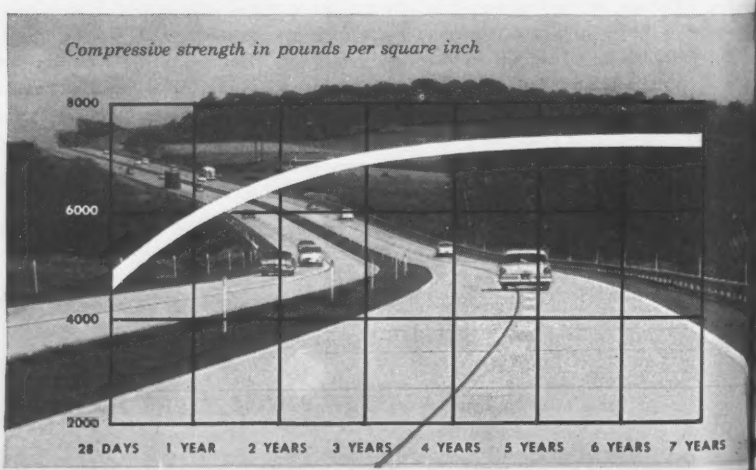


Only CONCRETE

On the Pennsylvania Turnpike concrete shows a rising curve of strength year by year. Seven years ago, 90-day cores from the eastern extension tested an average compressive strength of 5,068 psi. Latest cores from same locations show an average compressive strength of 7,226 psi. An impressive strength gain of 29%!



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Roads automatically provide 100% added strength for lasting load-bearing ability!

Laid flat, concrete stays flat. Traffic rides smooth and steady . . . travels fast and far.

Modern concrete is the *engineered* pavement . . . designed mathematically to specific wheel load requirements. When you work to accepted design practice, you get a pavement that can support twice the rated axle load . . . a 100% margin of strength.

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Concrete often saves money in other ways, too. For example, on the Indiana Toll Road, engineers drew up designs for both types of pavement, proved concrete would save $9,740,000.

And truckers are the experts who can tell you that today's concrete means gentle treatment of cargoes. It's the flattest, smoothest-riding pavement there is. Small wonder concrete is the preferred pavement for the Interstate System and other heavy-duty highways.

PORTLAND CEMENT ASSOCIATION *A national organization to improve and extend the uses of concrete*

How to Use

By A. L. Elliott

A welded steel plate-girder bridge of unusual composition will shortly be erected in northern California.

Carrying a highway over Whiskey Creek, near the old gold rush community of Whiskeytown, this structure will not differ much in external appearance from conventional girder bridges, though it is of advanced design. It is distinguished instead by a novel adaption of high-strength steels.

Different grades of steel will be used for flanges and web plates in different parts of the girders. To employ each grade to best advantage and to maintain a constant girder cross-section, thus keeping fabrication costs down, the engineers call for high-strength steel where the stresses are high, and ordinary-strength steel where the stresses are low.

As stresses vary along the length of the bridge, the grade will be changed three times—from 32,000-psi-yield-point steel of welding quality (American Society for Testing Materials Specification A373) to 42,000-psi minimum yield point (ASTM A242), then to 90,000-psi minimum yield point (U. S. Steel Corp's T-1). The result is nearly uniform sizes of flanges and webs throughout.

The Whiskey Creek crossing is the newest of several bridges in which this concept has been applied. Those bridges differ from prior structures built with high-strength steel principally in these two ways:

- The steels in the new bridges are much stronger.
- The components are joined by welding.

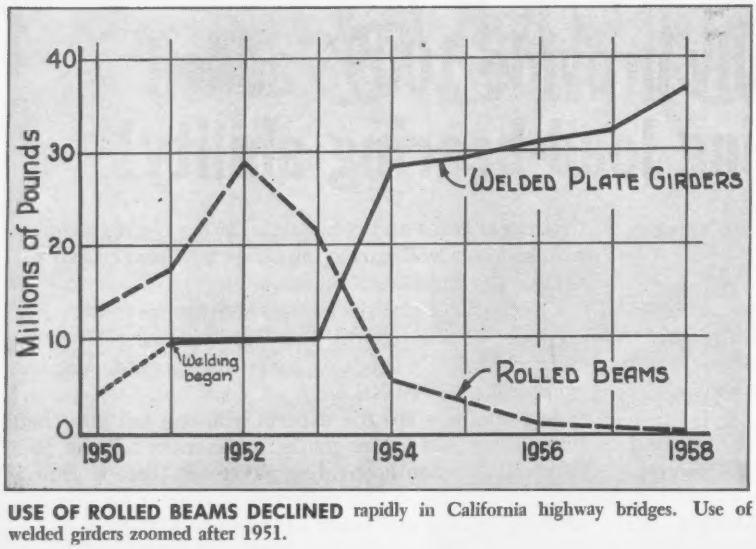
• Cost-cutting connections—Welding makes possible 15% to 20% savings in steel weight. The high-strength steel can be used without waste for splices and lap joints. And plates can be joined edge to edge to form box and plate girders, without flange angles, splice plates and thousands of rivets.

Furthermore, welding is an economical connection method, making possible development of the full strength of the better-grade, but more expensive, steels.

Progress in use of high-strength steels has accompanied advances in connecting methods. But recently metallurgists have pushed ahead with still stronger steels; progress in applying them to

Mr. Elliott is Bridge Engineer in Planning, Bridge Department, California Division of Highways.

THE TREND STARTED with Carquinez Bridge, completed in 1958. It's made of three grades of steel.



USE OF ROLLED BEAMS DECLINED rapidly in California highway bridges. Use of welded girders zoomed after 1951.

High-Strength Steel Effectively

structures awaits development of suitable welding techniques.

• **A little goes a long way**—Strength is not the only consideration in selecting a steel for a structural application. Other physical characteristics, such as toughness, ductility and weldability, are equally important, and these as well as strength are influenced by addition of small amounts of alloying elements to steel.

Adding carbon to steel, for example, increases strength. But as more and more carbon is added, the steel becomes hard and brittle. Soon a point is reached where the steel is virtually useless for structural applications.

This carbon limit is rather low. Exceeding it may lead to disaster: Steel might crack in cold weather or be shattered by vibration. If a load of hard reinforcing steel is rolled off a truck, the hooks may break off or shatter like dropped candy canes. Hence, in structural steels, carbon content must be kept low enough to retain toughness and ductility.

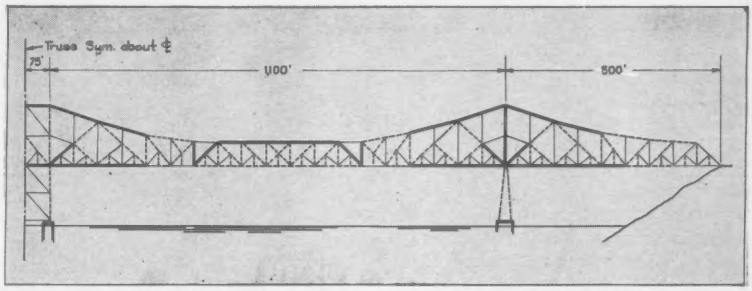
To be weldable without brittleness, steel must have a carbon content less than 0.25%. Manganese also is critical and should be below 1.25%.

Research on weldable high-strength steel has concentrated on addition of other elements to increase strength and weldability without raising brittleness to an objectionable point. It is now common to have at least ten different elements specified within narrow limits for high-strength steel.

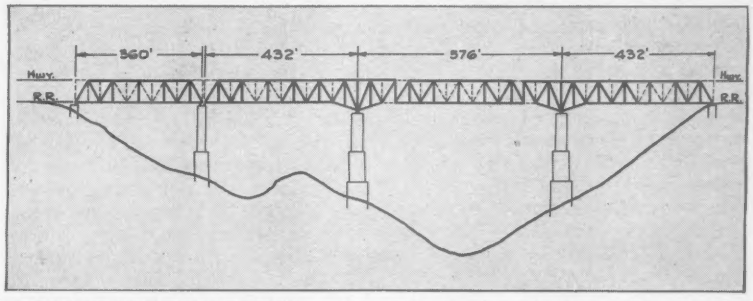
• **Heat-cool problems**—In addition to alloying, steels can be given high strength through heat treatment. But when earlier heat-treated steels were welded, the welding heat negated the treatment, and the heat-affected zone usually became brittle.

Research led to development of steels that retain or even gain strength under rapid cooling after welding. However, the weld metal usually does not have similar properties. So some post-heating is often necessary to control grain growth when plate thicknesses differ greatly.

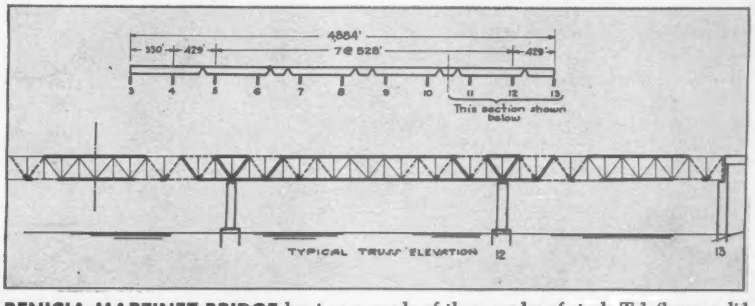
• **Less rolled beams used**—Adoption of welding caused some major changes in steel use in California. Before 1951, use of rolled beams had been increasing steadily. For long spans, cover plates were riveted on, and sometimes the webs were split and plates inserted to increase the depth of the beams. But these were expensive solutions to the long-span problem.



TRUSSES for Carquinez Bridge are of T-1 steel where heavily stressed (heavy solid lines); medium-stressed members are A242 steel (dash lines); low-stressed, A373 (light solid lines).



RAILROAD-HIGHWAY BRIDGE over the West Branch of the Feather River is of A7 steel (dash lines) and A242 steel (heavy solid lines).



BENICIA-MARTINEZ BRIDGE has trusses made of three grades of steel—T-1 (heavy solid lines), A242 (dash lines) and A373 (light solid lines).

After a short period of working with welded beams, California began to utilize welding to the fullest extent in 1954. Since then, use of rolled beams has tapered off to a mere 21 tons in 1958 (see graph).

Meanwhile, use of welded beams has been increasing steadily (18,500 tons in 1958). With this background of experience in welding, California was well prepared to make effective use of the high-strength steels when they became available.

• **Step by step upward**—When alloy structural steels were introduced about 20 years ago, California started to use them in bridges. In 1939, two large truss bridges were designed with over 2,200 tons of high-strength steel. Two years later, this new steel was covered by an ASTM tentative specification, A242, for alloy steel. After that, California used it extensively.

Well over 100,000 tons of A242 steel have been used in the past ten years in welded California highway bridges alone. This experience prepared the state's engineers for the next step, to a higher stress grade.

• **Three times stronger**—When the early designs for the second Carquinez Straits Bridge were beginning to take

shape about 1953, the new 90,000-psi-yield-point steel had not yet been used in large quantity in any structure. Since engineers are traditionally conservative, the normal procedure would have been to wait ten or fifteen years until the new steel was well tested before specifying it for a bridge. But the potential economies, the saving in weight and the reduction in size of members that this higher strength steel could effect were too attractive to permit its adoption to be postponed.

So California engineers undertook a thorough investigation of this steel, which the maker, U. S. Steel Corp., called T-1. After testing more than 3,000 lb of it, they decided to use it in a substantial portion of the Carquinez bridge.

This structure is a double cantilever with two 1,100-ft main spans (ENR Dec. 15, 1955, p. 45). Closely paralleling a bridge built in 1927, the newer crossing was given the same over-all lines and spans for appearance sake. But it was made of three types of steel. Heavily stressed members were fabricated with 2,910 tons of T-1, intermediate members with 5,370 tons of A242 and lightly stressed members with 6,440 tons of A373.

Use of alloy steels made possible a saving of about $800,000 in the cost of the Carquinez Bridge superstructure.

• Welding high-strength steel—During fabrication of the trusses, some defects in welding were discovered, and during erection, some transverse cracks were found in longitudinal welds (ENR Sept. 4, 1958, p. 42). The cracks frequently were close together, but in widely spaced groups.

All welds were rechecked and those that had cracks were removed and repaired. Less than 60 members were found to have cracks.

Since then, much time and money has been spent to duplicate the cracks deliberately and discover the cause. But duplication has not been possible. The cause can be deduced only from circumstantial evidence.

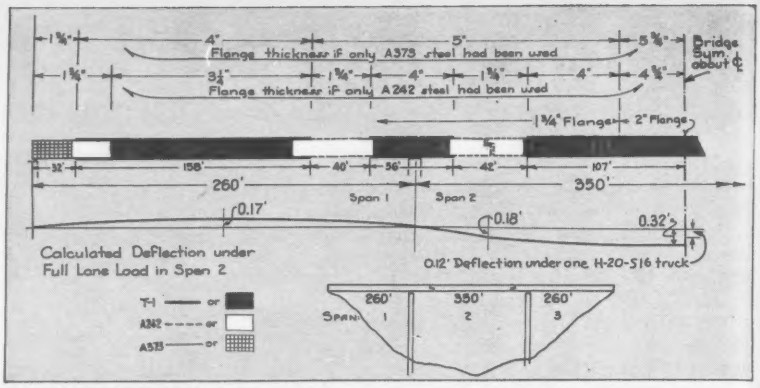
Part of the trouble seems to be attributable to the difficulty of getting welding rods that match the strength of the alloy steel. If this is true, special care should be taken to insure quality. A tack weld should be treated as meticulously as a major weld.

Use, care and handling of low-hydrogen rods and proper selection of combinations of wire and flux become very important with higher-strength steels. So does general housekeeping in the shop; dirt and moisture must be excluded. Welding high-strength steel is a precision operation, not to be undertaken casually or haphazardly. With proper care and attention to detail, successful welds are assured.

• Railroad-highway bridge—A242 steel is used conventionally in a truss bridge over the West Branch of the Feather River, now being built as part of the Oroville Dam project in northern California (ENR Sept. 24, 1959, p. 29). Since the bridge carries a railroad on its lower deck, design was governed by railroad requirements.

Riveted or bolted connections are used throughout. Welding of main members is confined to the highway portions.

Although this structure represents a conventional treatment, it illustrates the intermingling of A7 and A242 to achieve appreciable savings in weight and size of members.



THE LATEST DESIGN, Whiskey Creek Bridge, has plate girders composed of three grades of steel. Alloy steels cut flange thickness from 5¾ in. to 2 in. and make possible a constant web size—yet deflections are acceptable.

• Three in one—Three grades of steel are used to good advantage in the shop-welded, field-bolted Benicia-Martinez Bridge, now being constructed across Carquinez Strait about four miles above the Carquinez Bridge. Here, T-1 steel is utilized for the most highly stressed truss members. It also is used for joints to achieve strength with least weight and bulk.

Use of the high-strength steel made it possible to carry economically a uniform depth of truss for the whole length of the bridge, whereas with ordinary steel the sections over the piers would have had to be deepened. It is conservatively estimated that use of T-1 steel saved $500,000 on this bridge.

The Whiskey Creek bridge mentioned previously is another example of the highly effective use of three grades of steel. This three-span, welded, plate-girder structure will carry relocated US 299 over a deep canyon high on a mountainside. (The existing US 299 route will be flooded just west of Redding by the reservoir of a dam now under construction.) The Whiskey Creek girders will have a 350-ft center span incorporating a 260-ft suspended span. End spans will be 260 ft.

The girder web plates will be 144 in. deep and ¾ in. thick throughout, made possible by use of three grades of steel.

How Price and Strength Compare for Three Grades of Steel

	STRENGTH			BASE PRICE		BID PRICE				
TYPE OF STEEL	YIELD STRENGTH psi	WORKING STRESS psi	PERCENT WORKING STRESS (A7=100)	BASE PRICE PER POUND	PERCENT BASE PRICE (A7=100)	FABRICATED & ERECTED PRICE CARQUINEZ BRIDGE	BENICIA-MARTINEZ	WHISKEY CREEK	AVERAGE PRICE PER POUND	PERCENT BID PRICE (A7=100)
A7 or A373	33,000	18,000	100	0.054* 0.064	100 118	$0.242	$0.1857	$0.24	$0.2219	100
A242	50,000	27,000	150	0.07625	141	$0.275	$0.2174	$0.27	$0.2542	115
T-1	90,000	45,000	250	0.146	270	$0.348	$0.3448	$0.36	$0.3508	158

*1-1½-in. plate

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. . . Using high-strength steel effectively

The flanges are 1¾ in. thick, except for 90 ft in the middle of the suspended span, where 2 in. was needed. This uniformity made shop fabrication simpler and more economical. Where the flange was changed to 2-in. thickness, the additional material was placed on the outside, to make the weld and web width continuously straight. Had A373 steel been used, a 5¾-in. thickness would have been required.

There are numerous advantages to this design: (1) A saving in weight, due to welding and use of high-strength steel. (2) Simple, less costly fabrication and good appearance. (3) Uniformity of sizes, avoiding abrupt changes in section and thus eliminating stress-raisers. (4) Uncluttered lines, simplifying painting and making maintenance less costly.

• **What about deflection?**—With steel used at higher than ordinary stresses, it is natural to ask whether deflections may not become excessive. Analysis shows that deflection is not of great concern with trusses, because they usually have sufficient depth to limit it to an acceptable amount. But beams and plate girders may deflect too much if designed to utilize the full strength of the newer alloy steels. As a result, it is not unusual for deflection to have more influence over the geometry of a high-strength steel beam than allowable working stresses.

Throughout the Whiskey Creek design, an eye was kept on calculated deflections. In particular, the position of the hinges of the suspended span was dictated by deflections.

• **What about buckling?**—Like deflection, the buckling characteristics of a beam depend on its shape more than on composition. With our present limited knowledge, it is not possible to exploit the capabilities of high-strength steels fully.

Not much information is available for determination of safe ratios of web thickness to depth of a beam to insure stability with such steels as T-1. California engineers have been extrapolating the ratios in the American Association of State Highway Officials specifications for ordinary steel (A7), silicon steel (A94), low-alloy steel (A242), and nickel steel (A8) to the working-stress range of T-1. They also have checked the results against values computed from accepted buckling formulas. The extrapolation, in every case, has proved conservative.

Tests are now under way on girders with very thin webs. The findings may lead to better understanding of the factors involved in buckling. Until this information becomes available, designers must stay within acceptable safe ranges. Greater design economies with high-strength materials may be possible with more knowledge of buckling.

• **Corrosion resistance**—Though alloy steels may have greater resistance to corrosion than ordinary steel, it is doubtful economy to use an alloy steel specifically for this purpose in structural applications where a paint coat will be applied and can be maintained. Failure of a paint film is a signal for repainting. So the basic anti-corrosion factors in an alloy steel do not have a chance to come into full play.

But for steel exposed where protective coverings cannot be applied, such as steel piles and sheetpiles, the additional protection of an alloying element is well worth the additional cost.

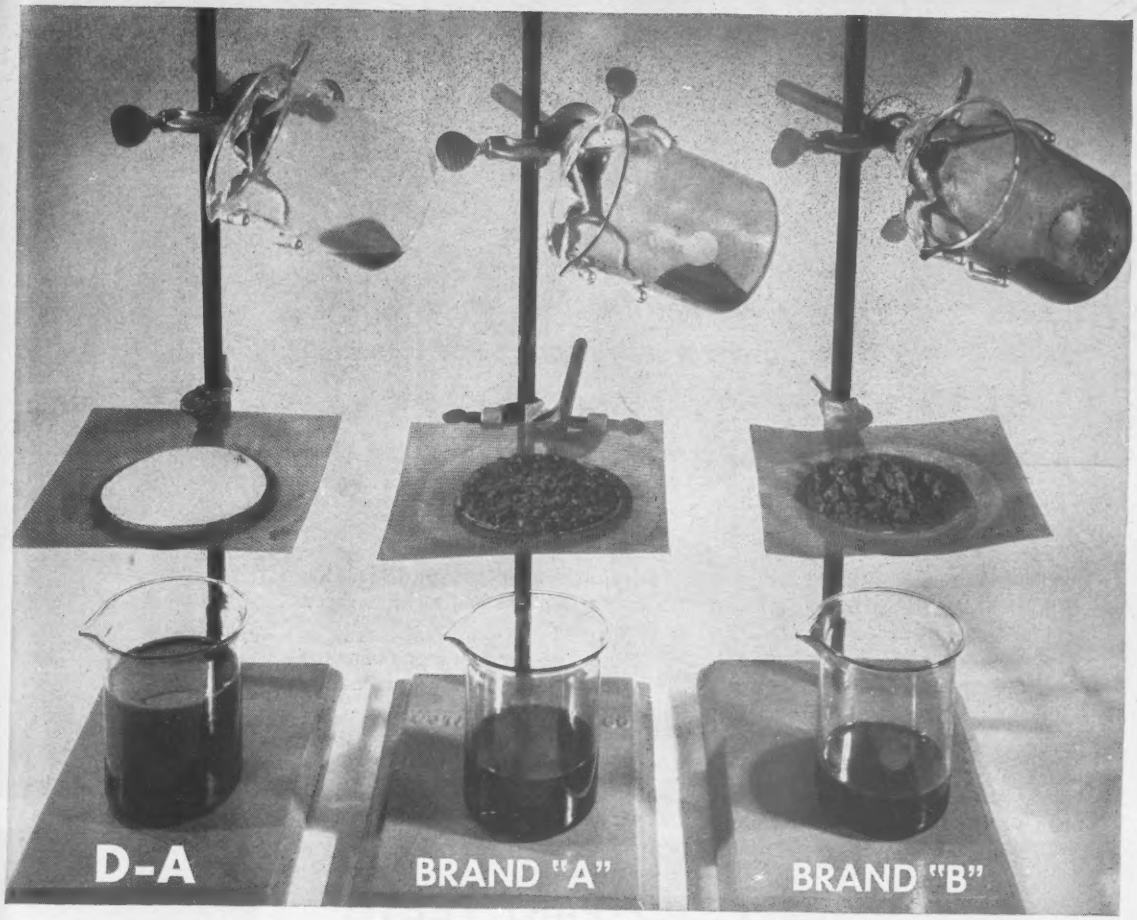
• **Cost comparison**—Factors on which cost savings with high-strength steels are based are summarized in the table on p. 54. Comparing cost and strength the table gives bid prices for three bridges, in each of which three grades of steel were used.

A comparison of base prices alone indicates that increase in strength is almost offset by increase in price. Savings result with high-strength steels because bid prices for fabricated steel do not follow this pattern. Although the relative strength of A242 steel with respect to A7 is 150%, the relative fabricated price is only 115%. Similarly, the relative strength of T-1 is 250%, whereas the relative fabricated price is only 158%.

In addition, there are several other advantages of high-strength steels that the figures do not show: There is less dead load, especially in long trusses. Constant-depth webs, uniform-thickness flanges and smaller members are possible. Construction previously considered impracticable can now be undertaken; it would have been impossible to fabricate the Carquinez trusses by welding A7 steel, because of the plate thicknesses required, and the Whiskey Creek girders would have been much deeper and of variable depth, if made of A7 steel.

• **Too many steels?**—The development of superior alloy steels has brought disadvantages as well as advantages. So many steels are now available and more are being developed that designers are confused.

Each steel company offers several steels in different stress ranges. Ultimate strengths may exceed 100,000 psi. Research laboratories report steels with 150,000-psi or higher ultimate strength ready for production if a market can be



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The unretouched photograph above shows the results of a 24-hour accelerated oxidation or sludge test. On the right, two leading brands of gear lube are badly oxidized following the test while, on the left, D-A Universal Gear Lube remains clear, stable and capable of extended use.

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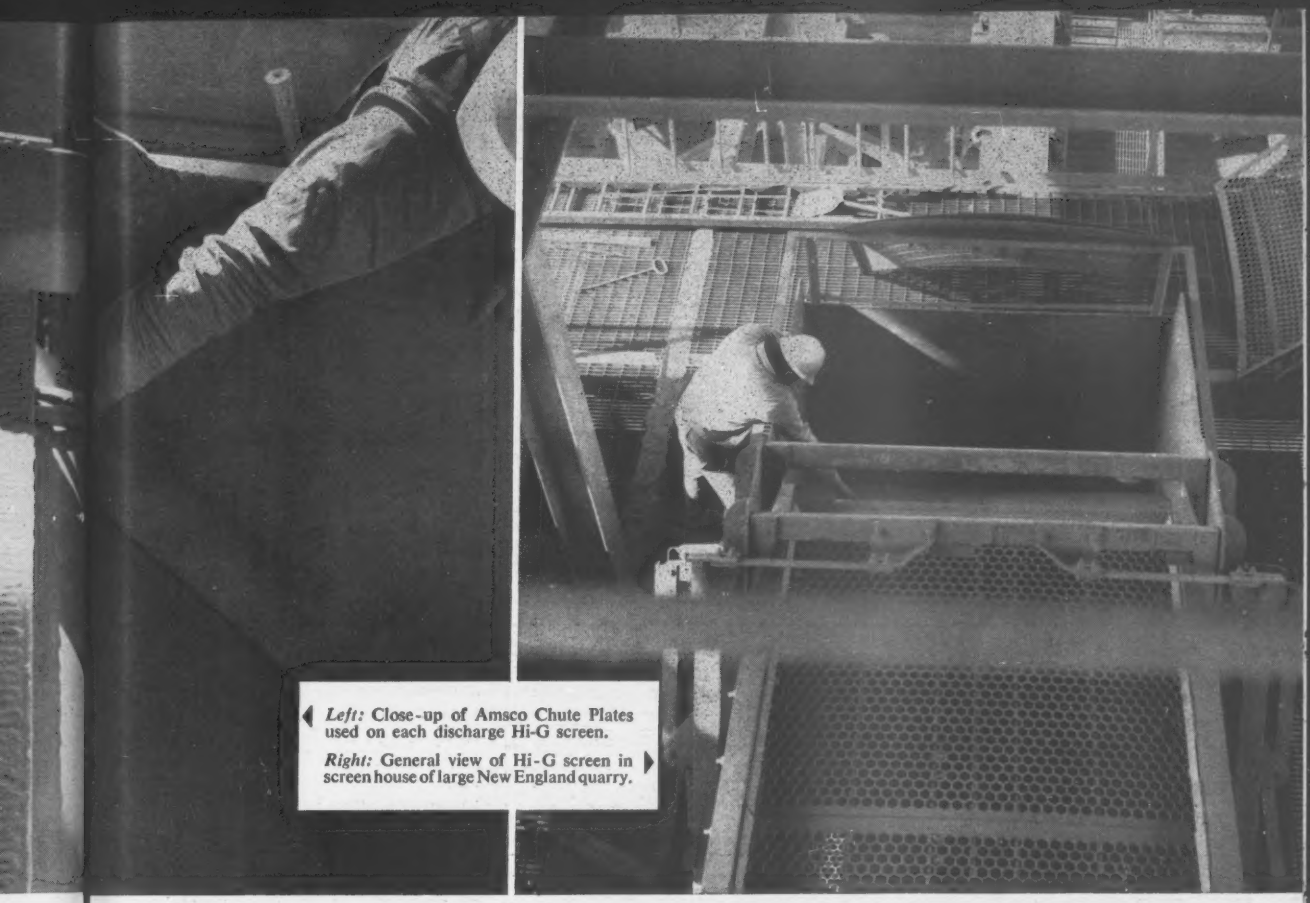
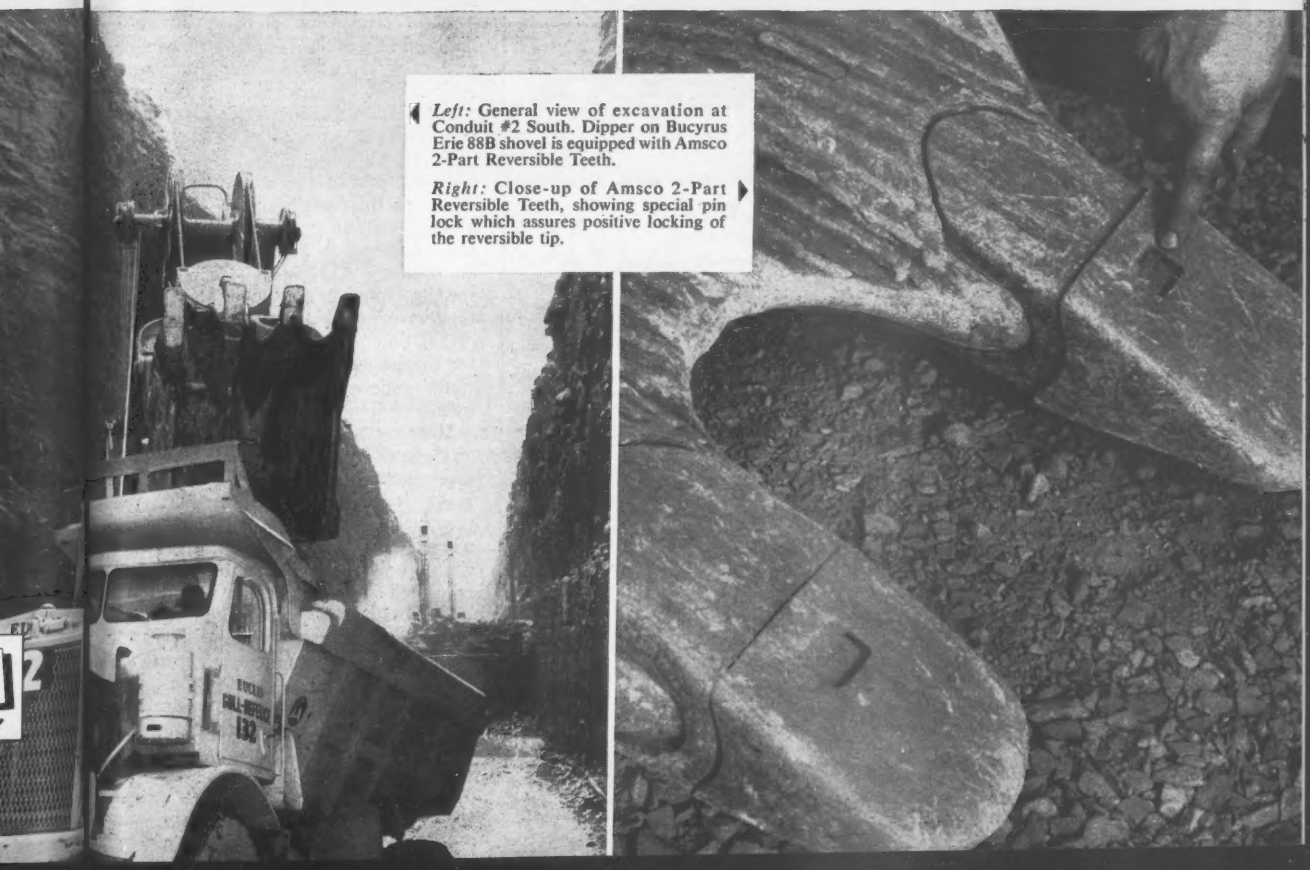


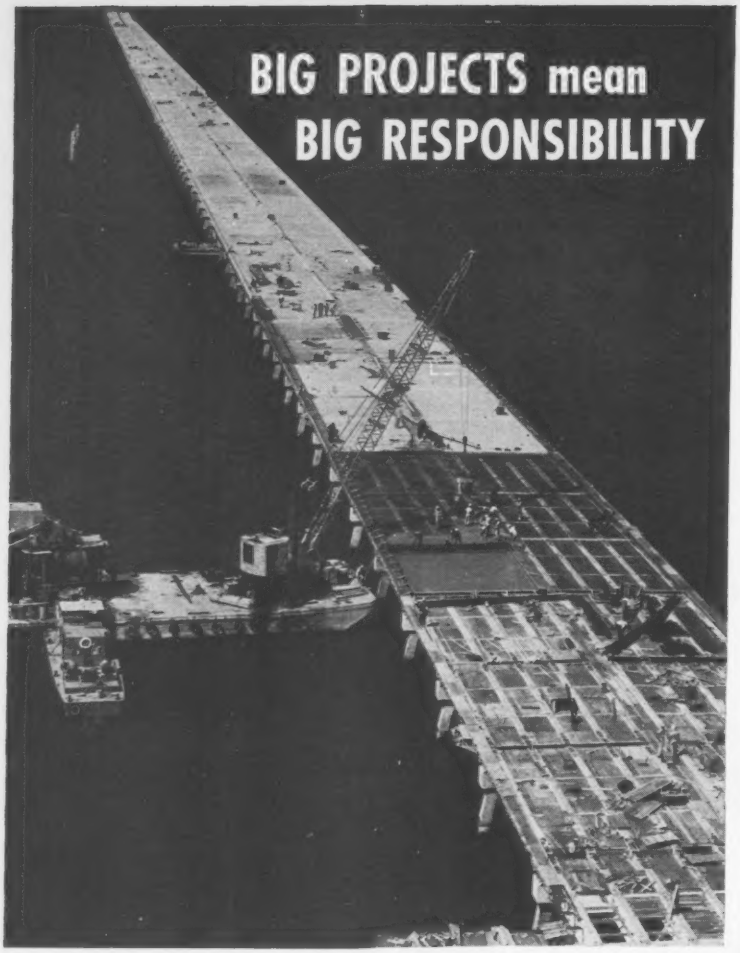
Left: Close-up of Amsco Chute Plates used on each discharge Hi-G screen.

Right: General view of Hi-G screen in screen house of large New England quarry.



Left: General view of excavation at Conduit #2 South. Dipper on Bucyrus Erie 88B shovel is equipped with Amsco 2-Part Reversible Teeth.

Right: Close-up of Amsco 2-Part Reversible Teeth, showing special pin lock which assures positive locking of the reversible tip.



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. . . High-strength steel

found. But can structural designers use these steels?

While it is possible theoretically to interlace a structure with steel of different grades working at 20,000 psi, 30,000 psi, 35,000 psi, etc., it would be a mess to fabricate. Also there is no economy in furnishing a 40,000-psi steel to meet the requirements of a 27,000-psi design. And it is not reasonable to tailor a design for a number of odd-strength steels.

For purposes of orderly design and specification, it is essential that the stress grades be grouped into classes. There probably should not be more than three classes to cover the range of available strengths.

Agreement is needed on the stress classes, so steel makers will have a target to aim at and designers a choice of steels within clear-cut stress ranges.

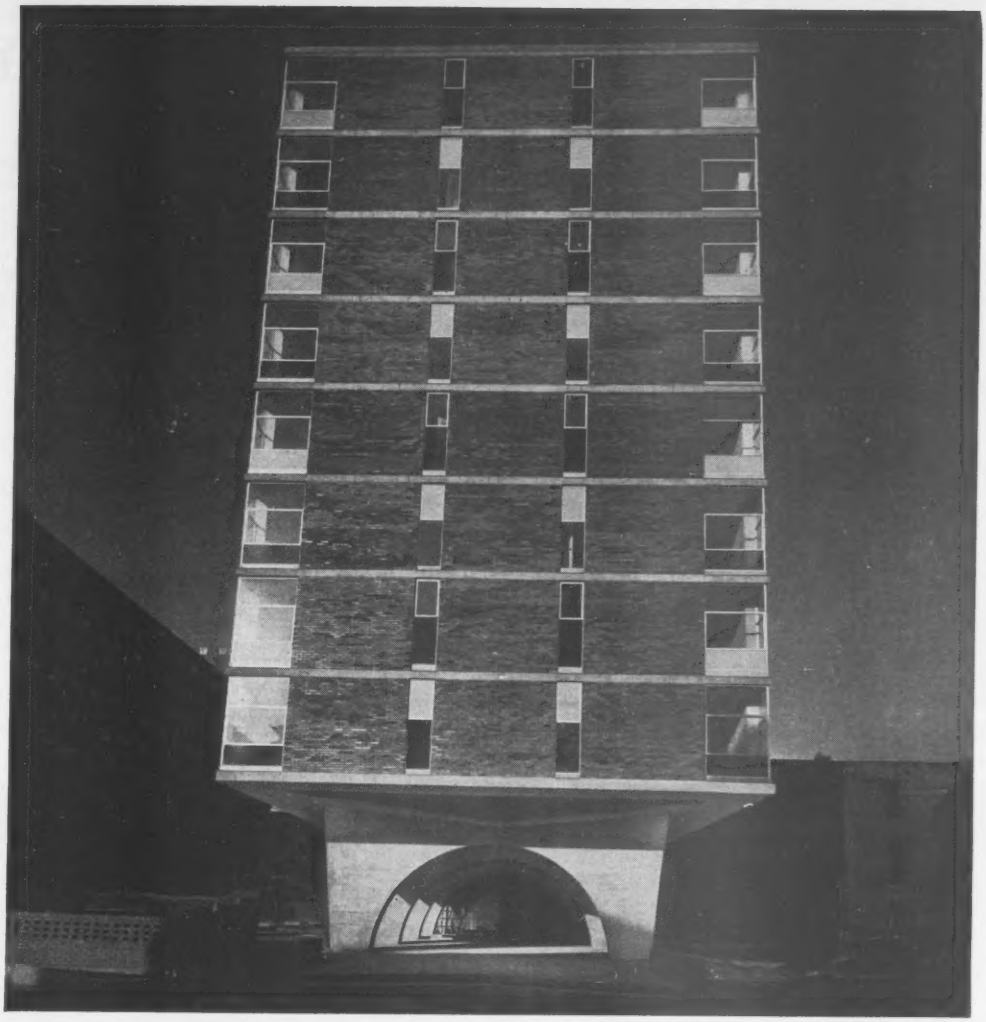
• **How much weldability**—Another need is clarification of the weldability of the various stress grades. Though it is generally agreed that carbon content must be below 0.25% for satisfactory weldability, specification A7 doesn't set a maximum on carbon. Nevertheless, carbon is well below 0.25% in most A7 steel. Hence, it seems reasonable to assume that an A7 steel could be graded by its carbon content and an A7-weldable steel offered at no extra price.

A242 steel, one step in strength higher, has a 0.22% limit on carbon, as well as restrictions on manganese and sulfur. But an unweldable steel may result if other alloying elements are combined in an unsatisfactory way. Thus a weldable and unweldable steel both fall within the chemical requirements of this specification.

This leads to confusion. There have been cases when both a weldable and an ordinary A242 steel were specified for the same job and suppliers jumped to the conclusion that a proprietary "A242-type" steel would be accepted for the weldable A242. But unless specially ordered, the proprietary type usually will not meet A242 chemistry.

It only causes chaos to push commercially steels that almost, but not quite, meet accepted chemical and stress-grade requirements. Designers and suppliers should mean the same thing when they specify a steel. And steps should be taken either to make all steel furnished in a given grade weldable or differentiate clearly between weldable and unweldable steels.

Stepping from promising experience thus far, buoyed by expanding research and advancement, the steel industry has a brilliant future in the structural field if it can bring order out of this chaos.



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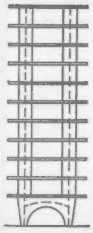

Proving that you can do the unusual with reinforced concrete is this luxury apartment building designed by Tasso Katselas. In this design, the entire first floor is supported directly on reinforced concrete arches which serve as an open colonnade leading to stairways and elevators. At ground level, the arches also support reinforced concrete columns extending the full height of the building, from which flat slab floors with continuous cantilevers extend around each side of the structure.

Only with reinforced concrete can you achieve such freedom of design. Before you build any type of building, investigate this more flexible medium of construction.

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Neville House Apartments, Pittsburgh, Pa.
Architect: Tasso Katselas, Pittsburgh, Pa.
Structural Engineers: Gensert, Williams & Associates, Cleveland, Ohio
Contractor: Gratziano Construction Company, Pittsburgh, Pa.
Photos by Jay-Bee Studios

Precast, Prestressed Stadium

Shaped fill, wood sides were forms for thin-shell foundation.

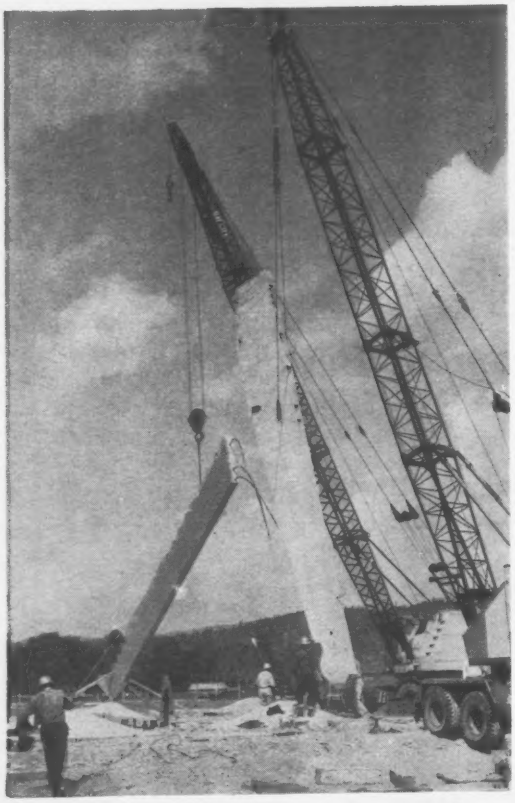
By Arthur R. Anderson

Sumner High School in Sumner, Wash., has a 2,000-seat stadium assembled from precast, prestressed concrete.

The structure, 56 ft wide and 180 ft long, comprises 10 typical bays. Each bay has a 3-segment frame consisting of a sloping serrated beam supporting the seats, an inclined rear column and a cantilevered roof beam.

• **Thin-shell footings**—The site, a fill underlaid by a deep deposit of soft mud, was limited to only 500-psf foundation soil pressure. After a 2-ft layer of bank-run gravel was spread and compacted over the site, the footings were put in—above the fill, to improve the load distribution.

Thin, reinforced concrete hyperbolic-paraboloids, successfully exploited by Felix Candela in Mexico City for footings as well as roofs (ENR May 16, 1957, p. 36), were adopted for this project to satisfy engineering and esthetic requirements. The shell action of this shape was also found economical for the



Sloping beam and column were erected . . .

Roof and stairs then were set on them.

Floats on Hyperbolic-Paraboloids

footings for this project. The footings are 12½ ft square, 5 in. thick.

Hinged connections between footings and superstructure were formed with neoprene bearing pads and vertical, steel dowel pins. The horizontal thrust between footings is taken by reinforced concrete struts cast at grade.

• **Held by prestress**—The frame members were precast and trucked to the site sufficiently reinforced to withstand transportation and erection stresses. Truck cranes were used to erect the components. After assembly, the joints were dry-packed with mortar. Then the members were post-tensioned together. The tendons were located to counteract dead-load, live-load, wind and earthquake stresses.

L-shaped seat sections, 13 in. by 26 in., 3 in. thick, were pretensioned with four ⅜-in.-dia seven-wire strands. These units were also reinforced throughout with welded wire fabric, which projected from the edges. After erection the overlapped fabric was tied and the joints filled with grout.

When integrated in this manner, the seat sections function as beams for live load and act as a diaphragm for resisting horizontal loads.

Four-inch-thick rear wall panels, 8 ft deep, were fitted between the columns. Ducts, 1½-in. in diameter, were inserted near the upper and lower edges of the walls, and lined up with sleeves through the columns. They provided a continuous passage for tendons from end to end of the structure. After wall-to-column joints were dry-packed, the tendons were post-tensioned, integrating walls and columns into a monolithic, continuous structure.

The roof beams, 42-ft-long cantilevers, were provided with a bottom flange for seating pretensioned channel-section roof slabs. When erected, the beams were supported temporarily at one end on timber shores. After the beam-to-column joints were dry packed and roof slabs placed, the beams were post-tensioned to the columns, the prestress lifting the beams off the falsework.

Sleeves in the roof beams were provided for steel ties between the ends of the roof slabs. The joints between the slabs and the beams were filled with concrete.

Finally, the columns were post-tensioned vertically to take the bending stresses introduced by the roof cantilever.

• **High concrete strength**—All precast members were factory produced. They had a minimum 28-day compressive strength of 7,500 psi.

Design of the stadium was by Lea, Pearson and Richards, architects, and Anderson, Birkeland and Anderson, structural engineers. The general contractor was Concrete Construction Co., and the precast and prestressed concrete work was by Concrete Technology Corp. All firms are headquartered in Tacoma.

Mr. Anderson *is one of the pioneers of prestressed concrete construction in the U.S. A consulting engineer, he puts his knowledge and experience with prestressed concrete into practice for his fabricating firm, Concrete Technology Corp., Tacoma, Wash.*

Precast concrete stadium is held together by tensioned cables. Roof is a 42-ft cantilever.

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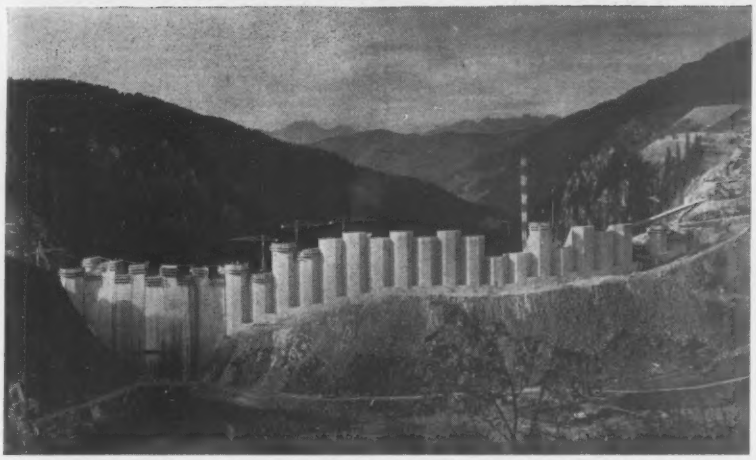


HALF COMPLETED Roselend Dam, from upstream, suggests the wall of a medievel city.

Buttress Dam Is Arch at Gorge

French engineers have combined two conventional types of dams with a unique result.

Now under construction in the Savoie region of the French Alps, the structure for most of its length is a buttress dam, but where the deep river gorge has to be blocked, a domed arch of major dimensions is used. In this portion the buttress dam is supported on the arch.

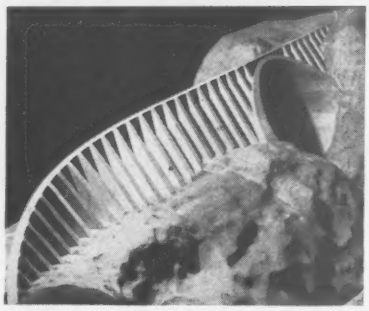
Roselend, as the dam is called, is part of an Electricite de France hydro project. Its underground power plant, some 10 miles downstream, will be the largest hydroelectric plant in France. It will have an installed capacity of 500,000 kw and be capable of an annual output of 1 billion kw hr.

The dam was conceived and designed by the consulting firm of Coyne & Bellier of Paris and is being built by a French contracting group known as GEBRO.

The maximum height of Roselend Dam is 494 ft from bottom of the foundation to the crest of the arch. The cross-gorge span of the arch is about 750 ft.

The buttress dam portions, which overlap the arch at their ends, are 1,700 ft long on the right bank and 525 ft long on the left bank. The total length of the dam is 2,600 ft.

The arch is being built in vertical blocks 42 ft wide. For the buttress portions, built in the same way, the blocks are 65 ft wide and will reach a maximum height of 297 ft. Hammerhead cranes running on a trestle in front of the dam place the concrete for the arch while a cableway is used for the buttress portions. Two mixing plants are required, one in the bottom of the gorge and one high on the right bank.



MODEL OF ROSELEND reveals dam's unique character—buttresses plus arch.

India and Nepal Forge Gandak River Development

India and Nepal have agreed on joint exploitation of the Gandak River for irrigation and power.

The agreement climaxes several years of negotiations between the two governments.

The project is expected to cost $101 million and take 10 years to complete. It will entail damming the Gandak where it cuts across the frontier, about halfway between the Nepalese capital, Katmandu, and the Indian city of Gorakhpur. The project includes also the construction of a powerhouse on each side of the border.

The development will bring 3.7 million acres of arid land under cultivation.

India expects to spend $10 million on the job before the end of her second five-year plan in 1961. The two coun-

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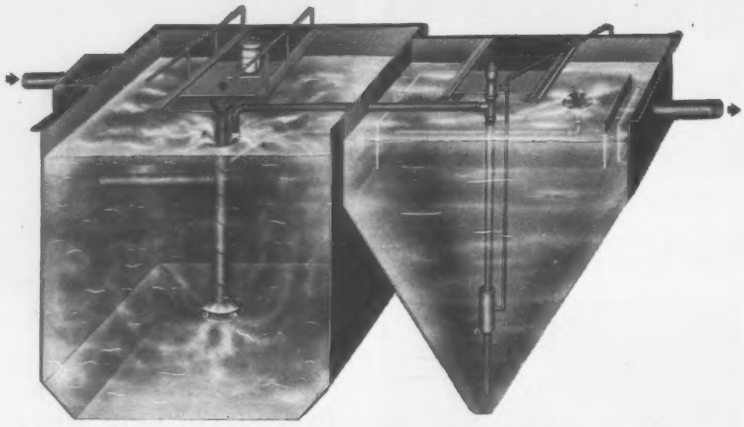

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tries plan to make an immediate start on the development project.

Political unrest in Asia on the probably smoothed the way to the agreement Red Chinese aggression on India's Himalayan border has made both India and Napal aware of a need to strengthen their ties.

War-Scarred Inchon Port Rehabilitation Finished

Korea's great port of Inchon, badly damaged in the war, will soon be ready to receive ships on an efficient basis once more. Its huge enclosed basin, 700 ft wide and 1,500 ft long, where ships are protected from the 32 ft tide, will be in service thanks to a $2-million rehabilitation job, financed by U.S. foreign aid funds and carried out by the U.S. Corps of Engineers.

Principal items of reconstruction are the replacement of the four miter gates of the 430 x 60 ft lock chamber and the building of new wharf facilities along one side. Two of the gates are 36 ft high and two 44 ft.

The work comes under the Pacific Ocean Division of the Corps headed by Brig. Gen. Ellsworth I. Davis in Honolulu, but the design was carried out in the Seattle District office. The contractor is the Hyun Dia Construction Co., Seoul, Korea, and field supervision is under Col. Daniel A. Richards, District Engineer, Far East District of the Corps.

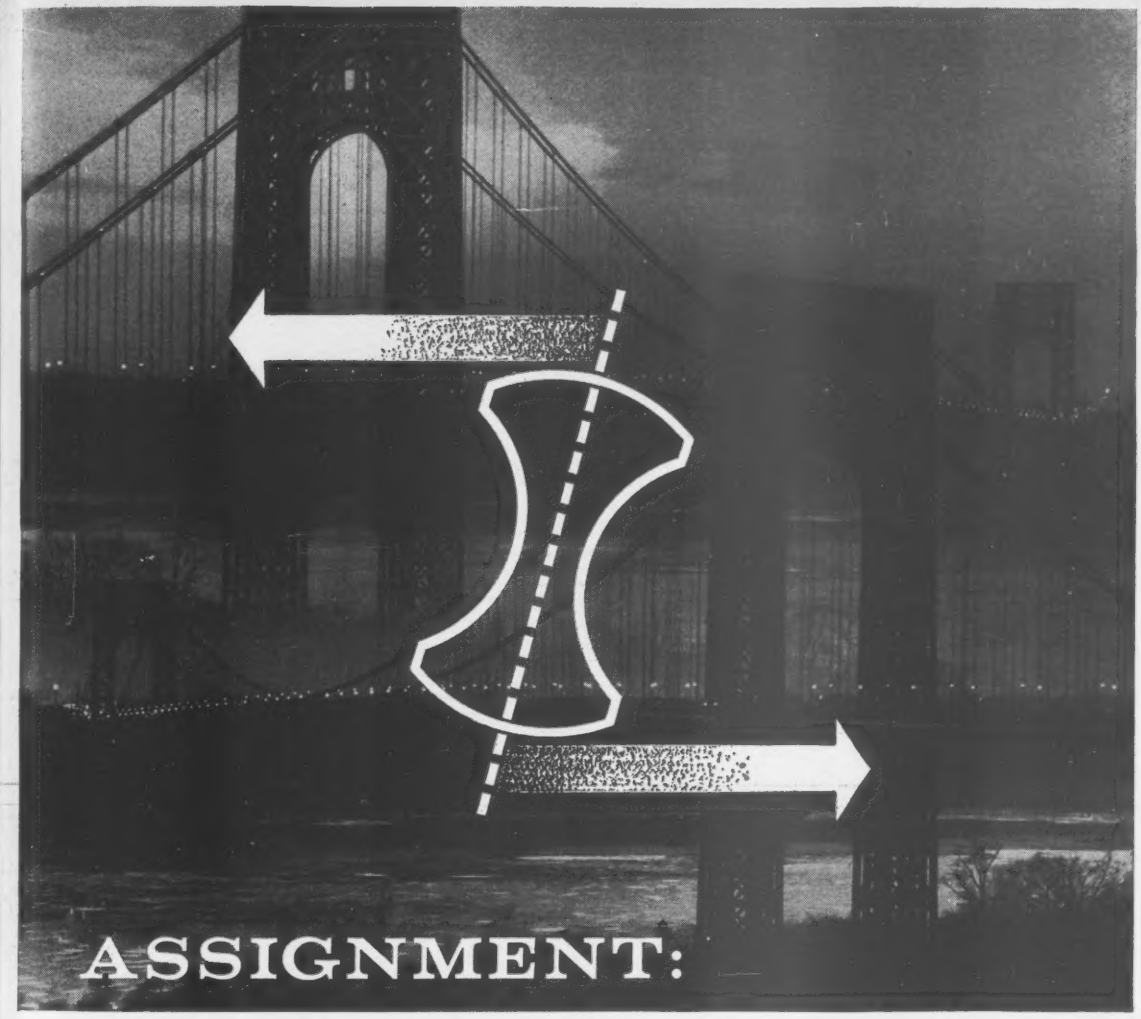
Argentina to Get $6-Million Aluminum Plant

A new company in Argentina plans to erect the largest aluminum fabricating facilities in the country at an initial cost of about $6 million. Construction will begin early this year. Full operation of the plant is scheduled to begin in 1961.

The company, Industrias Manufactureras Del Alumino S.A., is being organized by Kaiser Aluminum International and Guillermo Decker, S.A., a major manufacturer of non-ferrous metal products in South America.

The company plans to erect plant buildings of 130,000 sq ft gross area with provision for later expansion. Major items of equipment will include melting furnaces, ingot casting and scalping stations, hot and cold mills and extrusion and impact extrusion presses.

No site has yet been chosen. The plant will manufacture a wide variety of aluminum mill products for the building, consumer and transportation industries.



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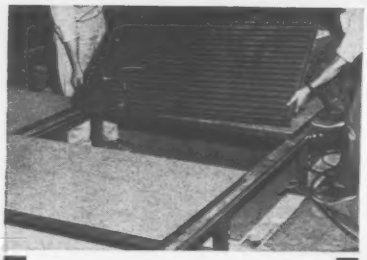

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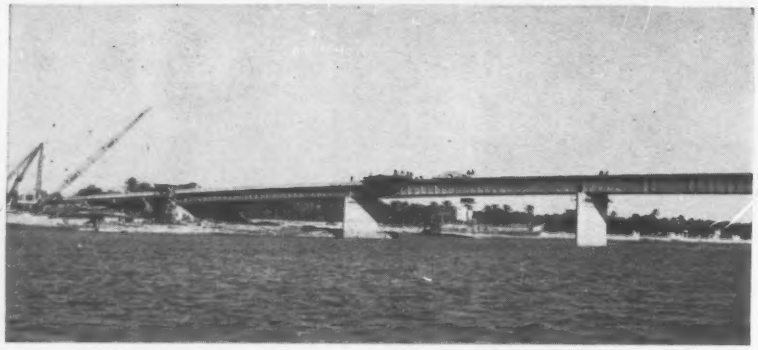

This new bridge over the Karoun River will replace . . .

. . . These ferries to the oil refineries at Abadan

Iran's Bridge to Be Dedicated

After dedication by the Shah of Iran on March 1, this new bridge will provide the first solid connection between Abadan Island, on which the country's great oil refineries are located, and the mainland at Khorramshahr, the country's principal port. Previously picturesque canoe ferries and motor launches for people and barges for freight were the only means of crossing the Karoun River within 60 miles of the port.

Known as the Pahlavi Foundation Bridge, the structure has an overall length of about 2,000 ft. Its five river spans each consists of five welded plate girders 165 ft long. The bridge has a width of 35 ft. which will accommodate both rail and highway traffic.

Designer and contractor was the Cementation Group of Companies of London. Construction began in September, 1958, and will be completed eight months ahead of schedule.

Grouting Prestressed Concrete

U.S. engineers are invited to submit papers and to attend a symposium on injection grout for prestressed concrete to be held in Trondheim, Norway, June 20-22.

The papers should be sent to Prof. Inge Lyse, Norges Tekniske Hogskole, Trondheim, by March 15. Professor Lyse, who was director of the Fritz Engineering Laboratory at Lehigh University during the Thirties, is chairman of a joint committee of FIP and RILEM appointed to study this particular subject. FIP is the international organization on prestressing and RILEM is the international association concerned with research and testing of materials.

Subjects to be covered by papers include grout composition, bond, methods of grouting and test procedures.

SHORING HYPERBOLIC PARABOLOID STRUCTURE—On the new auditorium for Edward S. Ingraham H. S., Seattle, Sound Construction Co., general contractor, uses 1300 standard "Trouble Saver" Shoring frames to support dome and slab formwork for this concrete hyperbolic paraboloid structure. Design involves three anchors, set 161′ apart, from which three center beams, 2′6″ x 4″, arch to 35′ high. Two perimeter beams per anchor fan out and intersect at 28′ high.

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BUILD UP TO WORK HIGH—For steeple repairs on the United Church, New Haven, Dwight Bldg. Co., contractor, uses this "Trouble Saver" Sectional Steel Scaffolding erected rapidly from 245 frames and 30 trusses bearing on the ground and the roof.

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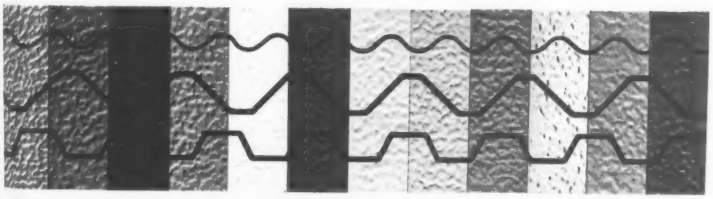

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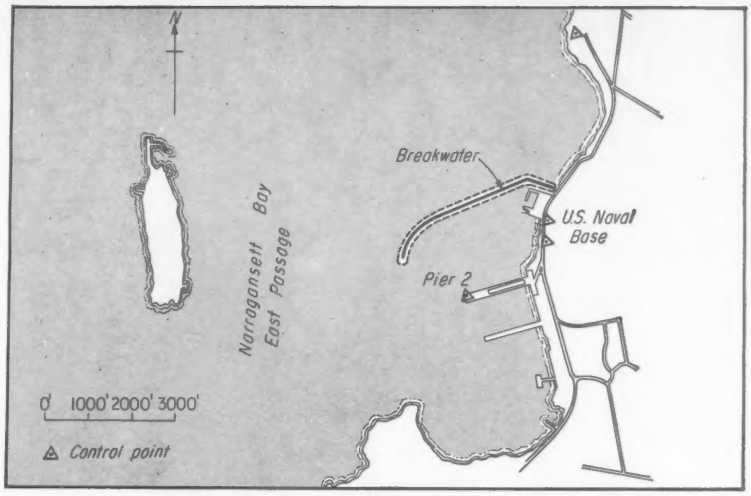

Breakwater site check methods were mainly traditional but . . .

Computer, Radios Speed Survey

By James R. Cass, Jr.

A survey and soils investigation to determine site conditions for a breakwater in busy Narragansett Bay, off Rhode Island, would have been most difficult with conventional techniques. But the engineers combined age-old methods with modern electronic computation and communication to expedite the work.

The program included soundings to determine the underwater topography; borings to ascertain subsurface soil conditions; and probings to measure the thickness of the top layer of soft silt. Water is up to 60 ft deep.

The engineers used ordinary surveying methods at the start of the job to establish a horizontal control system on shore. They defined several reference points from which the water work could be controlled. These, however, had to be widely separated to avoid interference from heavy marine traffic.

After locating the points with a first-order traverse, the field party submitted all data to the home office, where an engineer prepared it for an electronic computer. Input was taped from a standard program for adjusting random traverses. The computer produced balanced traverse data at the rate of two minutes per course and furnished coordinates of all traverse points based on an arbitrary coordinate system.

Next came a tentative alignment for the ¾-mile-long breakwater. After specific minimum distances and clearances from surrounding structures on the site were established, the breakwater was plotted on a 1-in.=50-ft scale plan. After minor alterations in location, the final alignment computed electronically gave coordinates for all control points. Range lines for soundings and locations for borings and probings completed the large planning layout.

Soundings were made by the lead-and-line method. Sonic sounding equipment was investigated but not used because of the reluctance of some contractors to accept its findings for payment purposes.

The soundings were controlled by three transits, one on the shore end of the sounding range line and one at each of two control points. Communication was maintained by four portable 2-way radio sets—one at each transit and one with the sounding party working in the bay. The distances involved made visual signaling impracticable.

After several trial runs, the field party began actual sounding operations. The transitman located on the range line relayed instructions to the sounding boat in the bay and maintained a continuous check on its position. Corrections were transmitted to the boat crew as necessary.

At predetermined intervals, personnel in the sounding boat signaled with a flag, and the transitman at each control point noted the angle between an established backsight and the boat. The flags were varied in color so that errors or omissions could be isolated in time to make necessary corrections, before plotting. As a precaution, radios were provided at the two control points to relay messages in case personnel in the sounding boat lost contact with the "range" transmitter.

During this phase of the project, different control points were occupied intermittently because naval traffic sometimes obscured a particular line of sight. Foreseeing this, the field engineer had selected a point remote from traffic lanes early in the program. It was used to locate over half the soundings that were taken.

The boat locations were plotted directly at 1-in.=50-ft scale.

Since the remote point could not be plotted on the plan, boat positions located from it could not be plotted directly. Instead, ordinates of these soundings were computed electronically, and the soundings were plotted accordingly. The computer program used to perform this work was written specifically for the job in less than one day, and the sounding locations were computed at the rate of four per minute.

Immediately after this stage of the project was completed, field crews began the soils-investigation phase. Locations of borings and probings were established on lines parallel to the breakwater centerline on a 50-ft grid. This permitted easy computation of coordinates of all points. By reversing the sequence of the computer program used to plot the soundings, angles to each boring and probing from predetermined backsights were computed for each of the various control points.

Again, several control points were used, to eliminate lost time caused by naval shipping activity.

Using the computed angles, the survey parties set the boring and probing rafts at the designated locations.

The last major problem was to superimpose the breakwater on a U. S. Coast and Geodetic Survey coordinate grid. One of the control points for the initial work was a USC&GS point. Observations were required, therefore, on only one other. Field data was taped and read into the computer; coordinates for the points and true bearings for the desired lines were printed.

To compare the actual cost of computer work with estimated cost of graphic methods is an involved problem. It is evident, however, that the computer speeded office and field work a great deal and was chiefly responsible for maintaining a uniformly high degree of accuracy throughout the job. Without radio communication the field work would have been impossible, we believe.

Fay, Spofford & Thorndike, Inc., of Boston, were the engineers.

Mr. Cass *is a project engineer for Fay, Spofford & Thorndike.*

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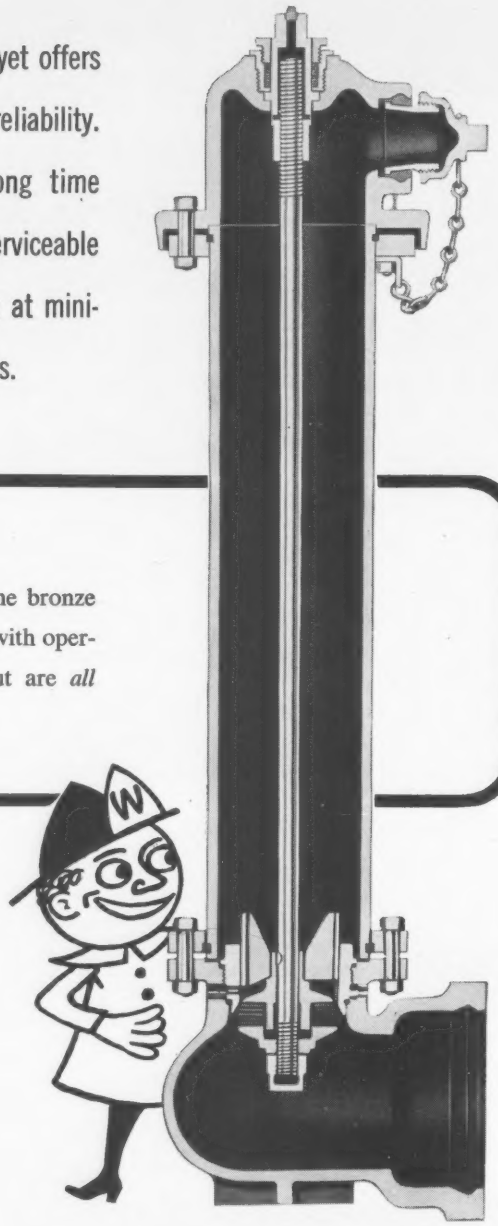

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Research workers can apply destructive loads to individual truss members as . . .

Full-Scale Bridge Tests Begin

By Gerald C. Ward

Researchers and bridge engineers had a rare experience last November when they observed the first destructive-loading tests of a 100-ft experimental steel bridge at Northwestern University.

This experience was unique in that the test was planned so that two end-posts of the bridge could be brought to failure without damage to the remainder of the structure.

Throughout the eight-hour test exceptionally complete instrumentation was maintained. This permitted close observation of the two test members and their behavior throughout all stages of loading, deflection and buckling. The opportunity for recording and collecting this data under actual conditions of structural interplay has seldom, if ever, been afforded.

The test structure is a half-scale model of a 200-ft, eight-panel, Warren-type, double-tracked railway bridge. It was designed and erected under the supervision of Prof. L. T. Wyly.

Truss members are medium-grade manganese steel, with all connections bolted. The bridge has a complete floor system made of ordinary carbon structural steel. Portals and cross-bracing are also carbon steel.

When a test of any member is to be conducted, the managanese steel member is removed and replaced by an identical piece made of carbon steel. The high-strength steel has a yield point of about 55,000 psi, compared to 35,000 psi for carbon steel. Consequently, the test member can be destroyed without appreciable effect upon the remainder of the structure.

This can be done repeatedly, inserting carbon steel specimens of different design. When all desired tests upon this member have been completed, the high-strength member can be put back into place. Then another member of the bridge can be removed in the same way and made the subject of similar tests. Thus it is possible to go through the entire truss to study the performance of each of its members under conditions of destructive loading.

To obtain information of maximum value to engineers concerned with both existing and future structures, the two trusses are of different design. Truss A has the traditional cross-section, with the angles of the members turned outward, and lacing bars used in appropriate places. Truss B, on the other hand, has the angles turned inward, with ovaloid-perforated cover plates used in the customary manner. While corresponding members of the two trusses are subjected to the same forces when the bridge is under load, there are some differences in stresses in the materials of which they are composed.

Loads are applied to the bridge by a unique system of fourteen 150-ton hydraulic jacks. One pair at each panel point deliver their forces to the stringers, thus bringing loads into the trusses in the normal manner. The jacks are supplied from two complete, centrally operated and controlled, hydraulic circuits running entirely around the structure. Different pressures can be maintained in the two circuits, and any jack can be "plugged in" to either to obtain various loading patterns.

In the test last November the two northernmost end-posts were brought to failure under a loading pattern that simulated a pair of two-engine trains, both headed north. Design load for this condition was 55 kips (55,000 lb) by each jack at panel points L_1 and L_2, and 40 kips by each of the remaining ten jacks for a total of 620,000 lb.

Observers measured the effects of this and subsequent loads with SR-4 strain gages placed at all critical points and upon all structural elements of the end-posts and connections. An electronic strain recorder was used to record longitudinal strains in each of the two end-posts, supplemented by precise

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Mr. Ward, *administrative director of the research project, designed and installed the hydraulic loading system.*

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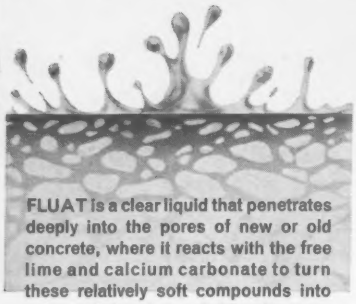
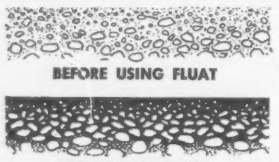
FLUAT



FLUAT is a clear liquid that penetrates deeply into the pores of new or old concrete, where it reacts with the free lime and calcium carbonate to turn these relatively soft compounds into extremely hard, insoluble silicates. These silicates completely fill and seal the concrete pores, creating a very dense and hard surface which actually increase the overall strength of a concrete floor!

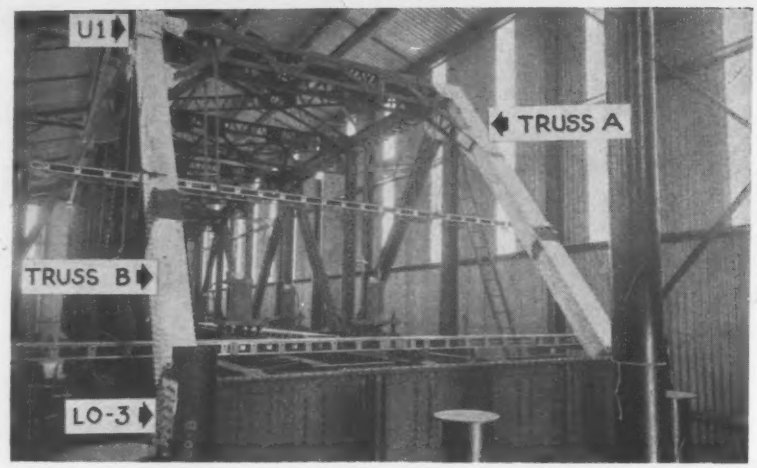
FLUAT-treated concrete floors have substantially increased resistance to wear, acids, alkalis and oils. Gritty dust from breakdown of concrete surface is eliminated.



FLUAT is easily applied to any clean, dry concrete surface with an ordinary brush. It remains in complete solution and requires no preparation before use.

FLUAT is available from Tretol Distributors in all parts of the U.S. Write or call for the name of your nearest Distributor and the complete Tretol Catalog of products for Concrete construction.

TRETOL INC.
Quality Products for Concrete and Masonry
7252 W. 66th STREET, CHICAGO 38, ILLINOIS



BRITTLE WHITEWASH on end posts helps detect strains during increment loading of the full enclosed test bridge.

optical tooling equipment capable of reading to 1/1,000 in.

Engineers measured rotations and translations of points L_0 and U_1 by a system of piano wires and optical instruments. Changes in the elastic curves of the end-posts were also measured by piano wire and steel scales reading to 1/100 in.

Movements of other portions of the structure, such as the deflection of the end floor beam, the elongation of the lower chords of the trusses, vertical deflections at the center of the span, etc., were measured with 1/1,000-in., dial gages.

Having ascertained the effect of design load, engineers began the process of carrying the end-post to failure. Preplanned increments of load were applied, and the behavior of the end-posts and their connections under each increment was measured.

Throughout this phase of the test, research workers maintained close control of the deflection of the bridge. For each load increment, a calculated deflection was allowed, and limit switches were set beneath the structure to make sure it was not exceeded. A deflection sufficient to trip the limit switch stopped any further increase in load; but held the load attained.

The limit-switch arrangement furnished the criterion for failure; when the bridge continued to deflect with no increase in load, it was considered that the end-post or posts had failed, and the bridge had lost its integrity as an engineering structure. Tests were terminated at that point.

Failure occurred at exactly three times design load, that is, at jack loads of 165 and 120 kips, in the pattern previously described—a total load on the structure of 1,860,000 lb.

Visible signs of failure were few, the principal ones being the inward bending of the gusset plates at L_0 of both trusses, a permanent deflection at the center of the span, and small damage to the cross-bracing between the stringers next to the end floor beam.

A preliminary analysis of data indicates that the end-post of Truss B (the box-type member) may have failed by a form of twist-buckling. The end-post of Truss A appears, simultaneously, to have been very close to failure. Lueder's lines (visible lines appearing on surface of metal when stressed beyond yield point) on both end-posts were pronounced. They indicated various points where the material had been stressed beyond its elastic range.

A negative result of considerable interest is the lack of any apparent slip in any of the bolted joints.

It is expected that analysis of the large amount of data secured will permit more definite conclusions as to what occurred. It will furnish valuable information to engineers concerning the performance of builtup steel columns under destructive loading and under the end conditions encountered in actual field service.

All research activity is conducted under the supervision of John F. Ely, acting director of the project. Results of the research are expected to be published as widely as possible.

The work is currently being sponsored financially by the Association of American Railroads, the American Institute of Steel Construction, the U. S. Bureau of Public Roads, the U. S. Corps of Engineers and Northwestern University. Materials and services have been contributed by a large number of other organizations and individuals (ENR Jan. 30, 1958, p. 53).

LACLEDE REINFORCING STEELS

strengthen new Illinois interstate system

This section of the new East St. Louis Expressway will soon become a part of the Interstate and Defense Highway U. S. Route 70 and 44. Approximately 1100 tons of Laclede reinforcing bars were furnished for this project, which spans the major mainline railroad tracks connecting St. Louis and the East.

Put the complete line of Laclede reinforcing steels and services to work on *your* next job.

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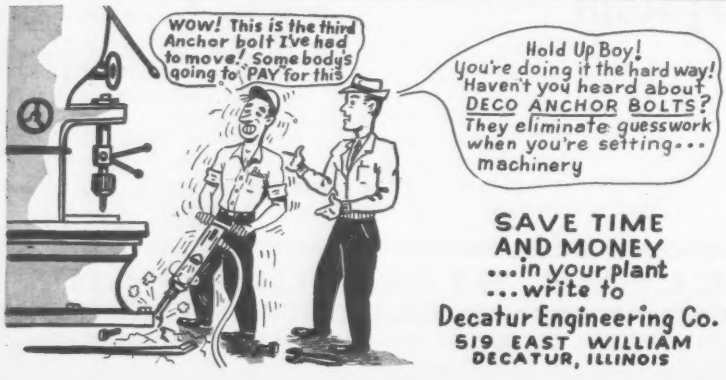
WOW! This is the third Anchor bolt I've had to move! Somebody's going to PAY for this
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French to Test Full-Size Tidal Power Generator

The final step in the development of a turbine-generator unit suitable for installation in France's proposed tidal power plant in the Rance estuary near St. Malo (ENR June 14, 1956, p 36) is now under way.

This will involve extensive testing of a full-size unit in a lock chamber in the port of St. Malo by Electricite de France.

The unit has recently been installed. It resembles a torpedo, and will operate with its axis horizontal. It is designed to develop 12,200 hp under an 18-ft head and an inflow of 8,115 cfs. It can operate either as a turbo-generator or as a pump.

The turbine runner is 19 ft in diameter and has pivoting blades. The total weight of the unit is 90 tons.

Previous testing of this type of turbine generator unit has been carried out in four river hydro plants in France —Castet, Argentat, Cambeyrac and Beaumont-Monteux—but this latest one has been built particularly for operation in salt water.

A total of 38 of these units will be required for the Rance tidal power plant.

Australians Try New Way To Slow Evaporation

In attempts to apply a monomolecular layer of cetyl alcohol to reservoirs to reduce evaporation, Australians are trying a new method.

A coarse wire brush rotating at high speed shreds a solid block of cetyl alcohol to fine powder. The powder is then blown onto the lake surface through a delivery tube by a fan. The entire operation is carried out from a boat.

Older methods that have been tried include floating of pellets of solid cetyl alcohol on the water surface in a wire container and dripping of cetyl alcohol in a volatile solvent on the water.

Metals Producer Provides Customer Counseling

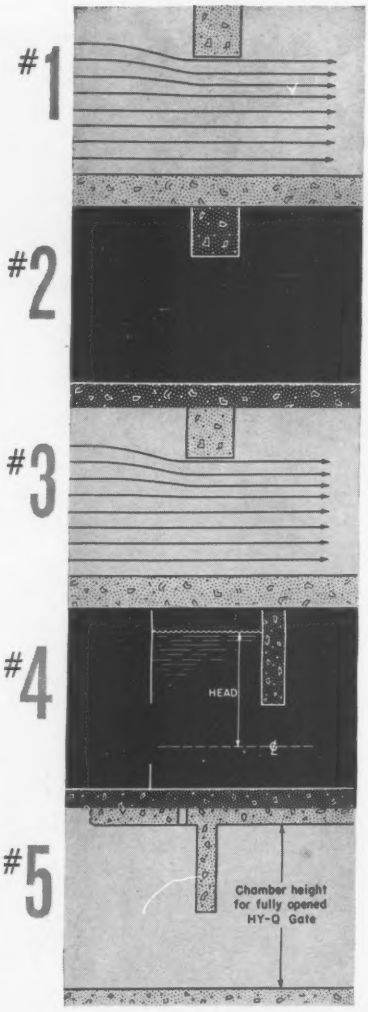
Chase Brass & Copper Co., Inc., Waterbury, Conn. has a program that will assist manufacturers in product development and improvement.

The new Product Development department will aid customers in solving problems involving design and material selection, long range investigations, market planning, appraisal of requirements in applications involving competitive materials, and development of new fields for copper-base alloys.

#6

SPECIFY RODNEY HUNT
HY-Q SLUICE GATES WITH FLUSH-BOTTOM CLOSURE
and get these 6 design advantages

HY-Q® Sluice Gates Mean Construction Economies



Because of the improved flow characteristics of the Rodney Hunt HY-Q sluice gate, a given volume of flow can be handled with a smaller gate size, narrower channel and lower channel walls than are required for a conventional gate. Thus there are often substantial economies effected in concrete construction. This improved flow is the direct result of the 5 other design advantages of the Rodney Hunt HY-Q sluice gate:

#1 HY-Q Sluice Gates Assure Maximum Flow

#2 HY-Q Sluice Gates Assure Complete Drainage

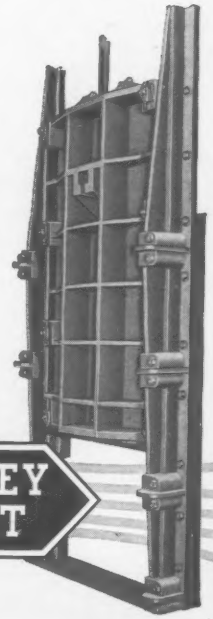
#3 HY-Q Sluice Gates Eliminate Interference with Flow

#4 HY-Q Sluice Gates Assure Maximum Hydraulic Gradient

#5 HY-Q Sluice Gates Permit Lowest Possible Invert

All these advantages derive from the design of the resilient seal fastened to the bottom of the disc. The seal extends the full width of the disc and provides a cushioned closing at the stop bar flush with the invert.

The HY-Q gate offers unmatched design flexibility and construction economy for water control projects . . . with hundreds of gate sizes available from 6" x 6" to 144" x 144" and larger to meet your specific design requirements.



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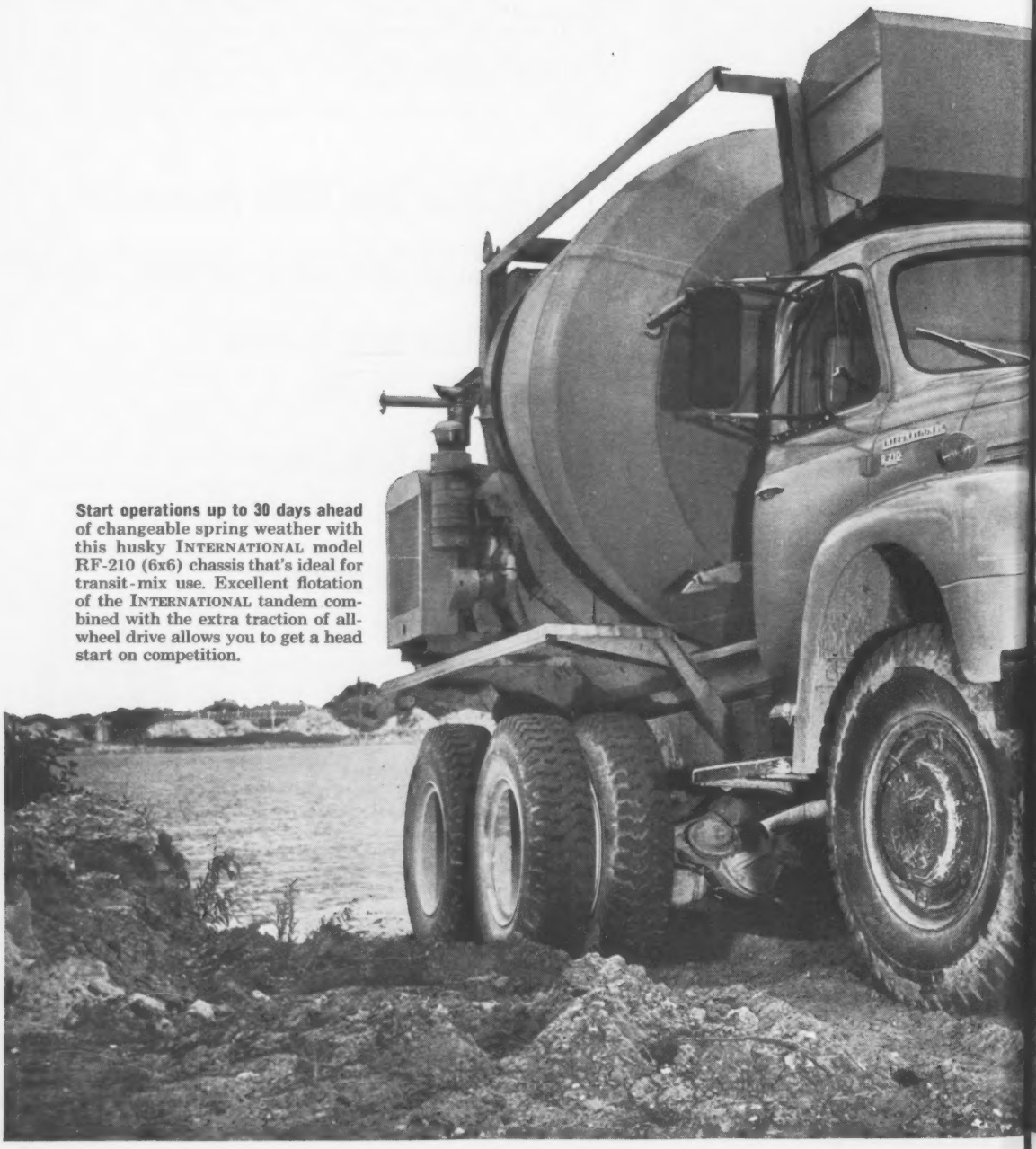
WITH INTERNATIONAL TANDEM-AXLE ALL-WHEEL-DRIVE CHASSIS



Start operations up to 30 days ahead of changeable spring weather with this husky INTERNATIONAL model RF-210 (6x6) chassis that's ideal for transit-mix use. Excellent flotation of the INTERNATIONAL tandem combined with the extra traction of all-wheel drive allows you to get a head start on competition.

Now you can get to the job with heaviest payloads—and equally important, get out to come back for more—with INTERNATIONAL six-wheel *all-wheel-drive* chassis.

Schedules are met smoothly because INTERNATIONAL supplies the ideal combination of big, tough axle and frame for maximum payloads . . . and all-wheel drive to ease out of time-consuming bog-downs.

You can sell customers better service with INTERNATIONAL *all-wheel-drive* chassis. They add new flexibility to your fleet, new versatility to your business operations.

All-wheel-drive chassis are available with up to 501 cu. in. gasoline engine or optional LPG engine. Power steering, or any special feature you may need, is available, too. See your INTERNATIONAL Truck Dealer today.

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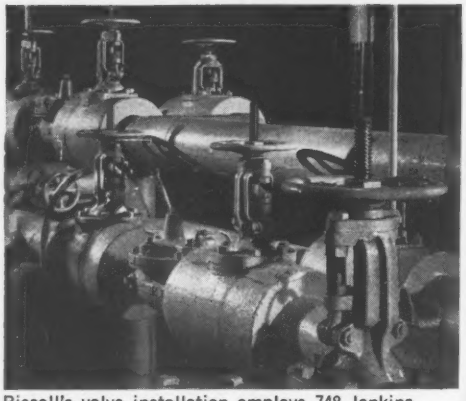
If you will put a Jenkins Valve, recommended for your particular service, on the worst place you can find — where you cannot keep other valves tight — and if it is not perfectly tight or it does not hold steam, oil, acids, water or other fluids longer than any other valve, you may return it and your money will be refunded.
Jenkins Bros

Almost a century ago two men established different kinds of businesses, one to make a revolutionary carpet sweeper and the other to produce the first valves with a renewable seat. Both of these pioneers began with the same firm determination: To make the finest product of its kind, so reliable that it could safely be backed by the strongest kind of written assurance of satisfaction.

The companies founded by Melville R. Bissell and by Nathaniel Jenkins still operate under that same high principle. Their names have become the most trusted in their markets.

Just as housewives seeking the best in cleaning products demand BISSELL, plant and building owners, architects, engineers and contractors wanting maximum reliability in valves commonly specify JENKINS. Valves for practically every need are made by Jenkins Bros., 100 Park Ave., New York 17.

Sold Through Leading Distributors Everywhere



Bissell's valve installation employs 748 Jenkins Valves of bronze and iron, sizes from ½" to 12".

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LOOK FOR THE JENKINS DIAMOND
VALVES
JENKINS SINCE 1864
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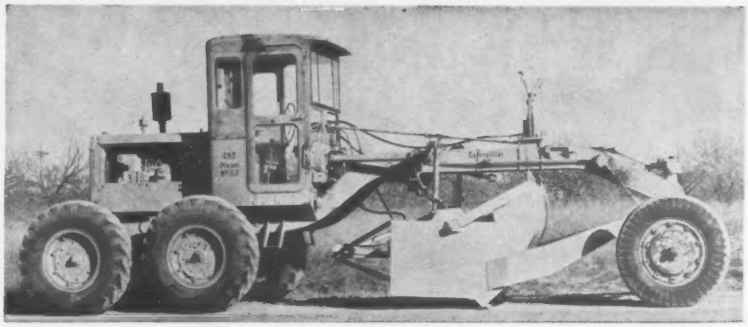

Scraper Bowl Mounts on Grader

A 3½-cu-yd scraper unit that can be mounted on a motor grader has been announced by the Martin Co.

The unit, called the "GradescrapeR", is designed for use on the Caterpillar 112, 12, and 14 motor Graders. It is mounted in place of the circle and blade and uses grader power and connecting points for load and unload.

The GradescrapeR can be tilted 17 deg to either side for ditching or crowning and it can be positioned to cut 6 in. outside of the scraper wheels. Ejection is hydraulically controlled. The apron opening is 19¼ in., and the cutting width is 9 ft 6 in.

The dumping and apron openings of the GradescrapeR are controlled by a separate hydraulic unit added to the motor grader engine. All other scraper operations, lifting and lowering, tilting and side-shifting, are handled by standard motor grader controls. Martin Co., 620 Adrews Avenue, Kewanee, Ill.

Truck mixers line up to feed forming rig for . . .

Casting Concrete Pipe in Place

Continuous concrete pipe is being cast in place by a unit that uses inflatable forms. Monolithic irrigation pipe can be laid in lengths up to 600 ft, at 8 to 12 fpm, according to the maker.

The forming machine is winched along in a freshly-cut, round-bottomed ditch, enveloping the inflated fabric form, already in the trench. Electric tampers force truck-mixed concrete under and around the hose-like inner form while the machine shapes the outer surface of the conduit.

The only interruption in the process is the deflation and removal of the inner form, which can be done about two hours after concreting.

Leap-frogging with a series of the inflatable forms makes possible continuous runs miles in length, the manufacturer claims.

Only 3 psi of air is required to inflate the forms. Made of neoprene-coated cotton, they were developed by Goodyear Aircraft Corp.

The only commercial application has been for irrigation pipelines, but storm drainage and other applications are forecast. Fullerform Continuous Pipe Corp., Phoenix.

Loader Can Be Mounted on Ford's Tractor Line

A subframe and equipment hydraulic package is now available to mount the new Ford "Super-Duty" loader on Fordson Major Diesel and Power Major tractors.

This subframe and equipment hydraulic package on a Fordson tractor enables industrial users to mount any combination of a Ford "Super-Duty" loader, backhoe, or counterweight boxes on this tractor to fit job needs.

The loader has a lift capacity of 2,500 lbs and a break-away capacity of 5,500 lbs, and can lift a capacity load to a height of over 11 ft.

Power for the loader is supplied by the independent "universal" hydraulic power package. This separate system provides fast bucket operation at rated engine speed, according to the manufacturer.

Contractors and material handlers can obtain buckets with capacities of ⅜ and ¾ yd.

A light material bucket is available with a capacity of a full yard. All buckets are tread width or more.

Optional equipment includes a material fork, industrial fork lift attachment, crane, dozer blades, and bucket and blade scarifiers. Tractor and Implement Div., Ford Motor Co., Birmingham, Mich.

High Strength Bearing Bolt Eliminates One Washer

A new type of high strength bolt requires only one washer instead of the two required for a conventional high strength bolt, according to the manufacturer.

Made of the same heat-treated, high-carbon steel (ASTM A325) used in ordinary high strength bolts, the high strength bearing bolt needs no washer under the button head.

The new bolt has a knurled shank set in a spiral pattern to facilitate placing, or driving when required. Tightening the bolt ordinarily requires only one man instead of the usual two-man crew. No holding wrench is required. Tightening procedure is the same as in regular high-strength bolting in all other respects.

Another feature cited by the manufacturer is the ease of removing the bolts for re-use.

Structural advantage is the greater slip resistance given through the body-bound fit. The Lamson & Sessions Co., 5000 Tiedeman Road, Cleveland 9, Ohio.

(*New Products continued p. 84*)

SOLO CONCRETE VIBRATOR

The only NEW DEVELOPMENT IN CONCRETE VIBRATORS IN 25 YEARS! 25,000 V.P.M.—"higher than hi-cycle"—this one man tool saves you $25 per day. It eliminates eccentric bearings and puts the $40.00 per 100 hours you normally pay for bearing replacement *right back in your pocket.*

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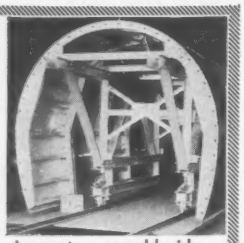

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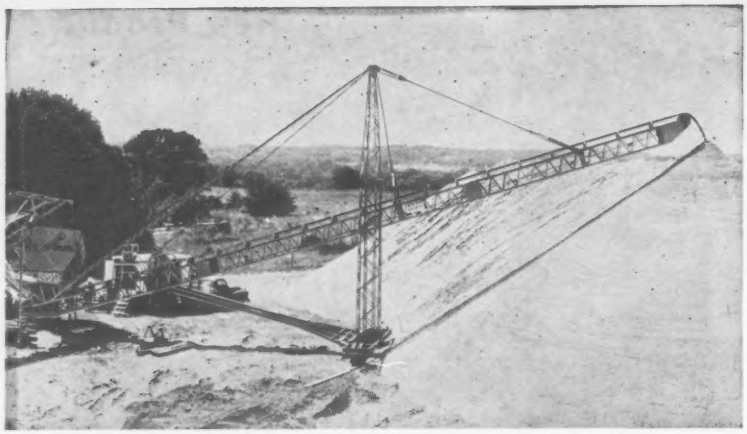

Stacker Is Cable Supported

A wide range of pneumatic-tired radial stackers in sizes from 90 to 150 ft long and 18 to 36 in. wide have been introduced.

Among the advantageous features claimed for the Kolman stackers is a cable suspension that permits raising or lowering of the conveyor during operation to reduce the fall of material and subquently minimize segregation.

Because the tower base is mounted on dual rubber tires, ramps and rails are unnecessary for radial movement. In addition, the wheels are swivel mounted so that they can be set parallel for transport of the stacker between sites. Power for conveyor lift and travel may be either electric or mechanical. KOLMAN MFG., P. O. BOX 806, SIOUX FALLS, S. D.

Portable Concrete Drilling Unit

"Method A", portable concrete drilling system, features a dustless, low-noise level-operation.

It consists of a power unit, dust collector, and dust exhaust swivel. The vacuum system draws concrete dust and steel cuttings through filters and into the dust collector. Air is cleaned further before expulsion, according to the manufacturer.

Carbide-tipped cyclo-core bits another feature of "Method A", cut easily through reinforcing bars. NEW ENGLAND CARBIDE TOOL CO., INC., 55 COMMERCIAL ST., MEDFORD 55, MASS.

(*New Products continued p.* 86)

fast, low cost compacting with

NEW IR "SAND WIPER" BACKFILL TAMPERS

▸*higher lifts...*
▸*higher speeds...*
▸*more power...*

"E-Z CLEAN" AIR STRAINER SCREEN

Protection against clogging and damage from foreign matter, easily accessible for cleaning.

RUBBER-FACED THROTTLE VALVE

Self-sealing, air tight valve impervious to moisture, grit, dirt.

CONTINUOUS PISTON ROD LUBRICATION

Smoother operation, less wear, longer life.

A revolutionary front-end design provides

EXCLUSIVE I-R SAND WIPER SEAL

Trouble-free operation with "Sand Wiper" front seal of neoprene-felt. Wipes chromed piston rod clean, keeps out dirt and grit.

POWER BLOWS DOUBLED

"Sand Wiper" delivers twice as many blows per minute, cuts costs and time.

55A18

Now—you can get desired compaction density with higher lifts. "Sand Wiper" Backfill Tampers are designed with new power and speed to save time and cut costs on your construction jobs.

Three Sizes: "Sand Wipers" are available in Sizes 241, 341 and 441 to meet your needs exactly.

I-R Triplex Tampers: For large projects requiring considerable backfilling, three "Sand Wiper" Backfill Tampers are mounted in yoke for fast, one-man operation.

Ample Air with I-R GYRO-FLO

Keep your air tools operating profitably with a Gyro-Flo portable rotary compressor. Gyro-Flo gives you economy through rugged dependability, low-cost upkeep.

More Information: Get complete performance and specification data on the new "Sand Wiper" Backfill Tampers by writing today for Bulletin 5269.

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Speedall Adds Tractor Shovel

The Model PM-440 has been added to the Speedall Tractor Shovel line. Largest of the line, the PM-440 has a breakout capacity of 24,800 lb, a lifting capacity of 21,000 lb and a carrying capacity of 11,000 lb. It is available with buckets of 3, 3¼, 3.9, and 4¼ cu yd heaped capacity.

The machine has a bucket rollback of 40 deg at ground level, and has a maximum dumping height of 9 ft.

Standard equipment on the PM-440 includes powershift transmission, planetary axles, torque converter, four wheel drive, and hydraulically assisted braking and steering. The unit is powered by either a 153 hp GM diesel or a 175 hp Cummins diesel engine. PETTIBONE MULLIKEN CORP., 4700 DIVISION ST., CHICAGO 51, ILL.

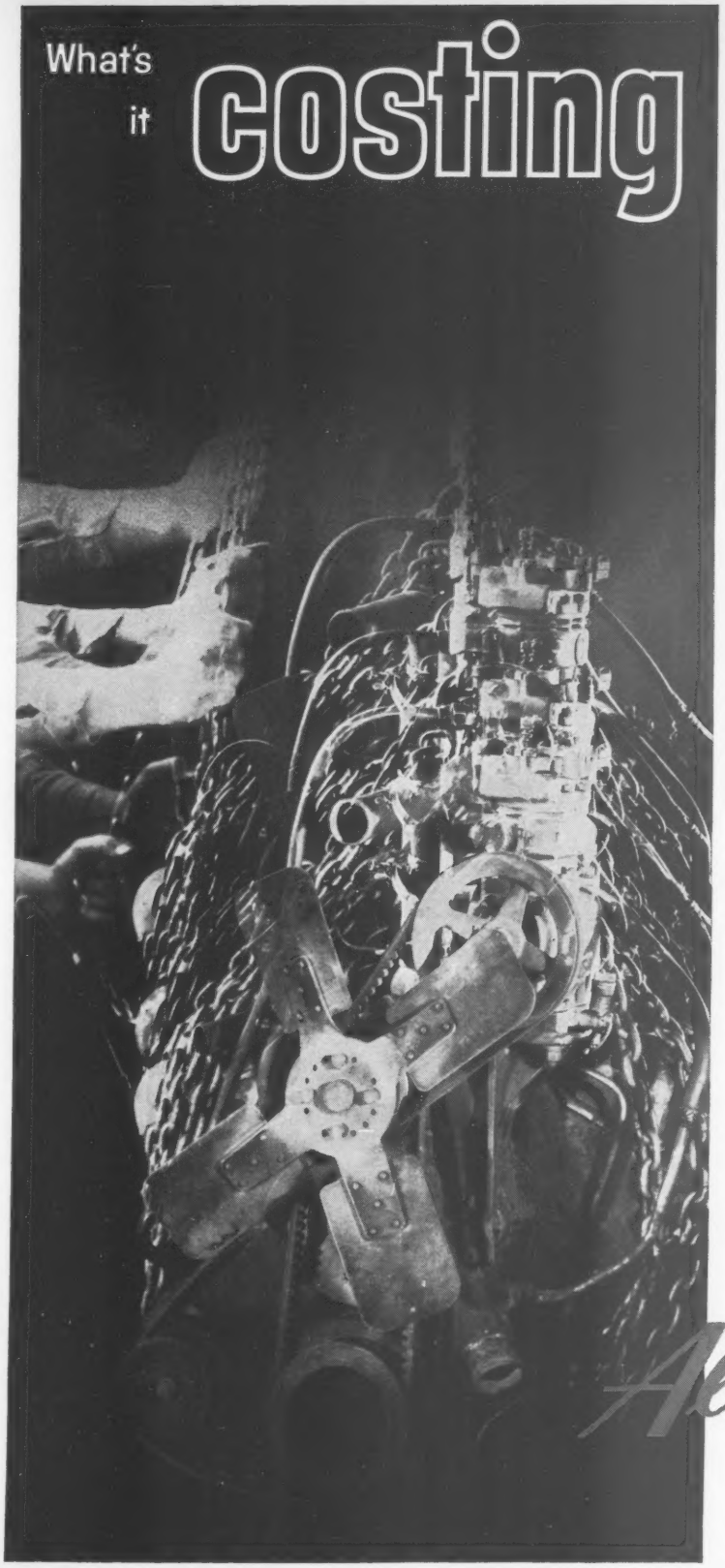
High-Speed Vertical Boom Ditcher

Originally designed for the U. S. Army Corps of Engineers, and under development for seven years, the Model 750 is a high-speed, heavy-duty, pneumatic tired vertical boom machine, digging up to 2 ft wide and 6 ft deep. During development, it was tested and operated at temperatures ranging from 125 deg F to minus 32 deg.

Designed to keep up with military truck convoys, the Model 750 is capable of over-the-road speeds of 27 mph.

The diesel-powered Model 750 Ditcher weighs 36,000 lbs and is mounted on heavy-duty pneumatic tires. Operating principle of the vertical boom is to move a chain of linked buckets at high speed, cutting through hard material with an action similar to

(*New Products continued* p. 88)



you to doctor tired engines?

Good as today's engines are, the cost of operation is a whale of a lot higher than it has to be if you're still using old-fashioned equipment with clutch pedal and clash-box.

For with a hydraulic drive – like Allison's TORQMATIC – you can free your engines from the shock-loads and strains which stick-shifts cause.

You see, TORQMATIC DRIVES extend engine life by virtually eliminating one of the main causes of engine wear – lugging. And they get more work out of an engine, too, because there's no power lag when the driver shifts.

SAVE MONEY AUTOMATICALLY

What's more, TORQMATIC eliminates all engine-disconnect clutch repairs – saving owners of big equipment an average of $800 a year in parts and labor. It saves up to $2,000 in equipment damage every time you train a rookie in operating big equipment – practically eliminates high repair bills for unavoidably shock-loaded drive lines and axles.

Just from the operating cost angle, the man with TORQMATIC advantages—who thinks about *total* cost, not just first cost – figures to head off a lot of competitors. Interested? See your equipment dealer today or write Allison.

Allison Division of General Motors
Indianapolis 6, Indiana

In Canada: General Motors Diesel Ltd.,
London, Ontario

Allison TORQMATIC

TORQMATIC® DRIVES

THE MODERN DRIVE FOR MODERN EQUIPMENT

a milling machine working in metal. Each bucket is self-cleaning.

Convenient controls are designed for easy one-man operation and the 750 is equipped with full power steering and hydraulic brakes. It is said to be extremely maneuverable.

While digging, the Model 750 gives the operator infinite speed control. An all hydraulic drive provides a range of forward, or "crowding" speeds from zero to 20 fpm. BARBER-GREENE CO., 400 N. HIGHLAND AVE., AURORA, ILL.

Calgary Officials Test 'Air Cushion' Sidewalks

City officials in Calgary, Alberta, are observing the behavior of several test sections of sidewalks designed to prevent damage from frost heave. Average winter temperature in Calgary is minus 13 deg F, and the test sidewalks are installed over frost-susceptible clay soils.

Most unusual of the experimental sections is one that incorporates an air cushion. The air cushion is provided by the use of cardboard "egg crating" forms that lie directly beneath the concrete sidewalk. Each of the crates is 4 ft long, 2 ft wide and 6 in. deep. Their sealer-type vertical compartments are designed to give way when subjected to heavy loads. Concrete used in these sections is reinforced.

Another 500-ft experimental section incorporates 4 in. of reinforced concrete on 2 in. of ¾-in. crushed rock over a 3-ft gravel base. A third section incorporates tile slabs on an 18-in. granular base.

City engineer A. H. Nicholson states that results of the experiments will not be known until late spring.

Single-Stick Control For Crawler Tractors

A master control for crawler tractors makes use of a single lever to perform the various steps of clutching, braking, steering and shifting for forward and reverse travel. Movement of the lever forward, backward or to the side actuates control elements of a hydraulic system.

The operator selects the proper travel speed, then moves the control lever. If he pushes it forward and then returns the lever to the center position, the crawler moves forward. If he pulls the lever backward and then returns it to the center position, the unit moves backward. To turn, the operator moves the control stick to the right or to the left.

In addition to reducing operator fatigue, simplified operation and ease of control are said to speed up working cycles and increase productivity. JOHN DEER & CO., MOLINE, ILL.

Westinghouse Electric Corp., San Bernardino, Calif. Contractor Donald W. Shaw, Los Angeles, Calif. Constructed with 8 Rilco laminated beams, 5¼" x 29¼" x 56' 5-13/16".

CONTRACTOR FINDS INSTALLATION

Cost Cut 50% with RILCO Wood Beams

Erection cost was cut in half when Rilco laminated wood beams were used for the new Westinghouse building, San Bernardino, Calif., reports Contractor Donald W. Shaw. He writes: "We found the Rilco people cooperative, delivery prompt and the product as advertised. Our installation cost was about half that of a competing structure—the client is quite pleased."

Adds W. B. Meek, Westinghouse District Manager, "We feel an exceptionally fine job was done in the construction of this building. Mr. Shaw selected the Rilco products used and our reaction is that it made a neat and satisfactory job."

Rilco laminated wood beams, trusses, purlins cost less to buy, less to erect, less to maintain. Each member is fabricated for fast assembly by regular job crews. And Rilco structural members have a high strength to weight ratio—offer the natural beauty and fire resistant qualities of glued laminated wood. Rilco service engineers will be happy to consult with you on church, school, industrial or commercial buildings. Write for complete information.

Write for free commercial construction catalog.

SEE OUR CATALOG IN SWEET'S

RILCO works wonders with wood

RILCO LAMINATED PRODUCTS, INC.
W801 First National Bank Building
St. Paul 1, Minnesota

DISTRICT OFFICES: TACOMA, WASH. • FORT WAYNE, IND. • NEWARK, N. J.

For a money-saving balance

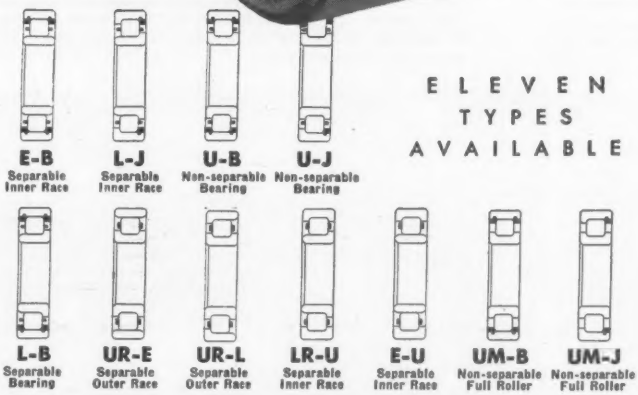
between maximum performance and moderate cost . . .

ROLLWAY Tru-Rol® BEARINGS

Give you more for your bearing dollar

For those hundreds of in-between applications where performance requirements are more exacting than those provided by the ordinary commercial bearing, but where maximum precision would be unneeded precision — specify Tru-Rol for the job.

Tru-Rol Bearings provide above-commercial-grade efficiency . . . at worthwhile savings in cost. Internal clearances are closely controlled. Rollers are equally spaced to eliminate out-of-balance vibration. Each roller is crowned to distribute the load evenly along the full length of the roller. Eleven types available in single and double width bearings, in stamped steel retainer, segmented retainer or full roller construction.



Ask your nearby Rollway Service Engineer to detail the quality you *should be getting* in your "commercial grade" bearings. Or write for the Rollway Tru-Rol catalog showing the full line, and capacity and size ranges. ROLLWAY BEARING COMPANY, INC., Syracuse, N. Y.

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COMPLETE LINE OF RADIAL AND THRUST CYLINDRICAL ROLLER BEARINGS

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In temporary, semi-permanent, permanent service . . .
LAY MORE PORTABLE AIR, GAS, WATER LINES FASTER WITH REPUBLIC ELECTRUNITE GROOVED-END TUBING

Cut operation time and keep ahead of the job. In-the-field piping systems made up of Republic ELECTRUNITE® Lightweight Grooved-End Tubing solve fluid, gas, and air handling problems fast!

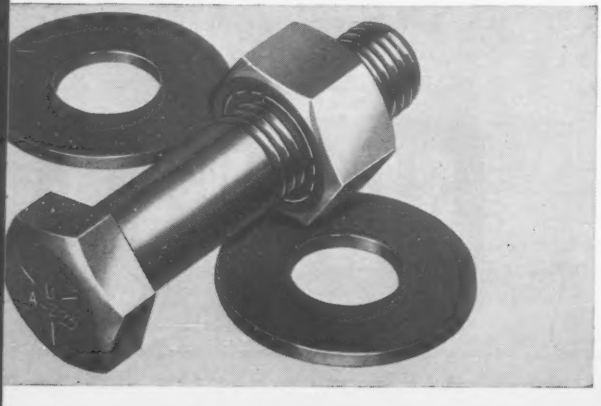
Republic's Grooved-End Tubing is engineered and produced to meet severe requirements and laying conditions of road building contractors, the mining, petroleum, construction, tank truck, and processing industries. Save installation time, dismantling time, over-all labor costs.

Joining is quick and easy. No threads to cut, no runs to turn. Simply use any of a variety of available fittings and couplings to make up a complete system. Lightweight, portable grooving tools are available for field-forming grooves on field-cut tubing.

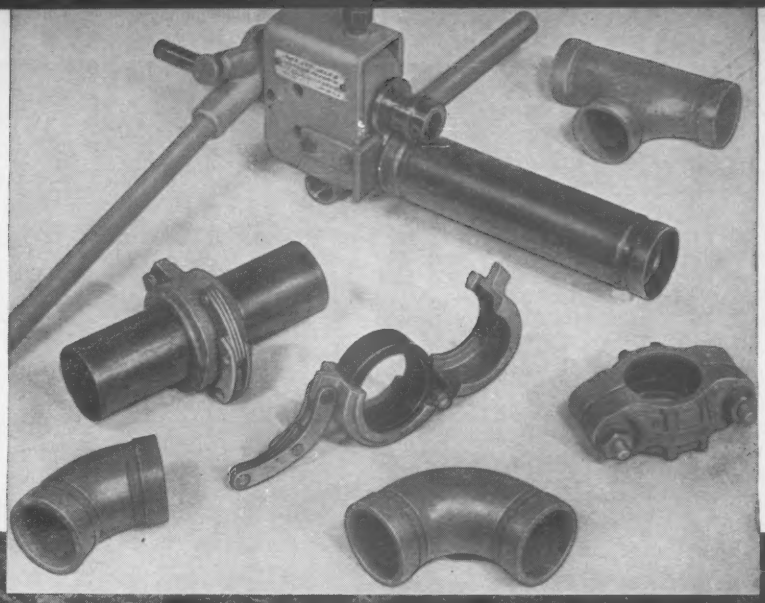
Ideal for temporary, semi-permanent, permanent service. It can be used again and again—re-laid as the job moves ahead. When work is completed, simply dismantle and move to the new job site.

For additional information, price, delivery . . . call or write your Republic representative. Use coupon below.

REPUBLIC HIGH STRENGTH BOLTING offers a method of construction that provides fast erection at low cost. Costly crews are reduced—two men can apply Republic High Strength Bolts. When drawn up tight, Republic High Strength Bolts provide a vise-like clamping force which transfers loads by *friction* to the structural members themselves. Fatigue life is improved. Joints are stronger than connections where loads are carried in shear. Write for additional information.



REPUBLIC SECTIONAL PLATE PIPE saves time and money with fast, easy assembly. It is engineered and fabricated at the factory—is easily assembled on the job with a minimum of labor and equipment. That's why full round 12-gage plates, 84″ in diameter, were used to construct this 90-foot cattle pass near Boise, Idaho. Send coupon for details and data.



IN-THE-FIELD OPERATORS like Republic ELECTRUNITE Grooved-End Tubing because it is uniformly round. Each length fits the other for fast make-up. Joining is quick and easy. Simply use any of a variety of available fittings and couplings to make up a complete system. Lightweight, portable grooving tools are available for field grooving field-cut tubing.

REPUBLIC STEEL LOCKERS mean security for protecting personal effects and tools on any job. Big and roomy, strong and sturdy, made of steel with heavy-duty construction throughout. Bonderized for extra protection against rust and corrosion. Available with any of the popular locking devices. Handle attached with tamper-proof Gulmite screw and lock-washer. Write for complete information.

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☐ Republic ELECTRUNITE Lightweight Grooved-End Tubing
☐ Republic High Strength Bolts ☐ Sectional Plate Pipe
☐ Republic Steel Lockers

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ADVANCE SCAFFOLD MAKES NEWS IN PITTSBURGH

The products of BEAVER-ADVANCE . . . tubular scaffold, accessories and material hoisting towers have been shaping new construction miracles throughout America. One such outstanding project presently nearing completion is the new Civic Auditorium at Pittsburgh, Pennsylvania. Here, thousands of ADVANCE Scaffold panels were engineered into a complex shoring system for construction of the concrete slab perimeter which supports the mammoth retractable roof of this huge amphitheater.

Of course, participation in modern construction miracles has become standard procedure for BEAVER-ADVANCE engineers and technicians. In fact, their efforts are continuously concentrated on the development of improved products and new methods of product application for better building. This has resulted in increased efficiencies and construction economies that are vital to our nation's future growth and prosperity. Architects, engineers and builders can be sure of top-flight construction every time . . . anywhere, when BEAVER-ADVANCE products are specified to do the job. They're for Rent and Sale throughout the United States by leading construction equipment distributors. Write for the name of the distributor nearest you.

Pittsburgh Civic Auditorium
Dick Corp., Large, Pa., Gen. Contr.
ADVANCE Shoring Scaffold by:
Linco Supply Co.
Pittsburgh, Pa.

BEAVER ADVANCE
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CORPORATION
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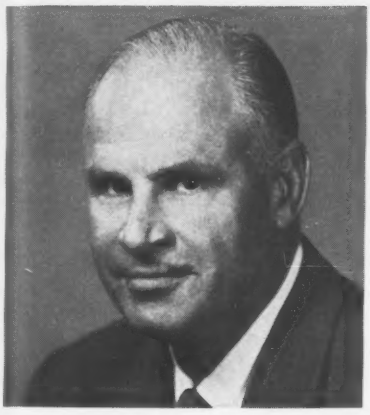
Penna.



A. O. Strandberg and J. L. Armitage move up as . . .

Morrison-Knudson Fills Posts

Two executives have been named vice president and director at Morrison-Knudson. They are A. O. Strandberg, manager of the organizations' Seattle district operations and John L. Armitage, executive in charge of the company's tunneling project at Oahe Dam in South Dakota.

Also appointed to a directorship is Joseph P. Frein, chief engineer.

Along with these promotions came the resignation of A. H. Johnson vice president and director, who is retiring after 37 years with the company. He has been the eastern district manager in New York.

Mr. Strandberg has been Morrison-Knudson's Seattle manager since 1954 and has directed some of the firm's largest construction projects. He was project manager for construction of the Aluminum Co. of Canada underground power facilities in British Columbia and supervised construction of the huge pumping plant at Grand Coulee Dam.

Mr. Armitage started with the company during construction of Deadwood Dam in Idaho in 1929 and later worked on Hoover Dam, Imperial and Shasta dams in California, and Norfolk Dam in Arkansas. After World War II he returned to direct construction of Santa Cecilia Dam in Brazil, Cresta and Rock Creek dams in California, Littleton Dam in New Hampshire and the Eisenhower Lock on St. Lawrence Seaway.

Mr. Frein joined the company in 1943 and worked on a wide range of projects extending from Madden Dam in the Panama Canal Zone to the Canol Pipeline in Alaska. He became chief engineer in 1951.

Riley Takes Consulting Post

John P. Riley, former vice president and chief engineer of Ibec Housing Corp. has been named vice president for development by Lockwood, Kessler & Bartlett, Inc., Syosset, N. Y.

Before joining Ibec, Mr. Riley was active for many years in New York City building programs. He administered and reorganized the building department of the Borough of Queens in 1938. Later he became chief engineer and director of development in charge of planning and construction for the New York City Housing Authority.

The city named him special co-ordinator of school construction in 1952 and in the following two years he reorganized the school design and construction program.

American Bridge Appoints Western Projects Director

Carroll C. Peterson has been appointed western district construction manager for the American Bridge Division of the United States Steel Corp. with headquarters in San Francisco. In his new position he directs construction projects for American Bridge in the eleven western states.

Mr. Peterson, a civil engineering graduate of the University of Nebraska, started as a draftsman with the company in 1941 following graduation. Before his recent promotion he was assistant to the district construction manager in New York and Chicago.

Among the projects he has worked on are the Sante Fe Railroad Bridge across the Colorado River at Needles, Calif., the Commodore Schuyler F. Heim lift bridge at Long Beach, Calif., and the Mystic River Bridge, Boston, Mass.

Mr. Peterson supervised the erection of the Paseo and Broadway Bridges over the Missouri river at Kansas City, Mo., the 54-story Union Carbide Building in New York City, and the St. Lawrence River suspension bridge at Massena, N. Y. He also directed erection on the Arthur Kill bridge, Elizabeth, N. J., the world's longest vertical lift bridge.

Mr. Petersen succeeds George W. Faulkner who is being transferred to the firms New York office.

Robert Rowe Leaves Duke To Be Dean of Vanderbuilt

Robert S. Rowe is leaving his position as chairman of the civil engineering department at Duke University to become dean of the Vanderbilt University Engineering School, Nashville, Tenn. Mr. Rowe, who succeeds the late Fred J. Lewis, takes over his new duties next September.

Last fall, Mr. Rowe was named consulting scientist to the Kerr Committee to advise the chief of research and development of the Army on off-road mobility of future Army vehicles. In 1955 he was a U. S. delegate to the International Navigation Conference in Rome and has also worked as a consultant to major industries on construction projects.

A native of Wilmington, Del., Dean Rowe holds a masters of engineering and Ph.D degrees from Yale University. He started teaching at Duke in 1956 and before that was on the engineering faculties of Princeton University, New York University and the University of Delaware.

(*Men and Jobs continued p. 94*)

Wertz Slated to Head AWWA

C. F. Wertz, director of the Department of Water and Sewers in Miami, is the official nominee for president of the American Water Works Association. His nomination is tantamount to election.

Mr. Wertz, who has been serving as vice-president of the society, received the association's George Warren Fuller Award in 1947 for outstanding service in the field of public water supply.

Named to replace Mr. Wertz as vice-president is John W. Cramer, partner in the consulting engineering firm of Fulton and Cramer, Lincoln, Neb.

William J. Orchard, retired general manager of Wallace & Tiernan Inc., Belleville, N. J., has been nominated treasurer.

A native of Pennsylvania, Mr. Wertz graduated from Pennsylvania State College in 1920 with a degree in sanitary engineering. He went to work for the state board of health as assistant engineer, and later worked for various engineering firms. In 1955 he took over his current position in Florida.

Careers . . .

Roy Aaron and **Jack C. Williams** have been appointed assistants to the managing director of the American Concrete Pipe Association. Mr. Aaron, a civil engineering graduate of the University of Illinois, has been with Chamlin Engineering Service, Peru, Ill. Mr. Williams, a graduate in agricultural engineering from the University of Minnesota, has been a field engineer at Ames, Iowa, with the Structural Clay Products Institute.

Paul Flood, H. E. Hanson and **Clay Armstrong** have been appointed to a team of managers for the Beloit division of Fairbanks, Morse & Co., Beloit, Wis. Mr. Flood is the new general manager of the large machinery division; Mr. Hanson, general manager of the diesel, compressor and locomotive division; Mr. Armstrong, general manager of magneto and engine accessory division.

Stephen M. Wilson Jr. takes over the newly created post of field sales manager for Atlas Power Company's explosives sales department.

Angelo R. Aquaro and **Martin M. Gross** have opened an architectural and engineering office in Philadelphia.

Paul Ehrenfest is now an associate of Willard F. Schade & Associates, Cleveland consulting sanitary engineers.

Jones, Henry & Williams, Toledo consulting engineers have moved to new offices at 200 West Central Ave., Toledo 6, Ohio.

G. A. Eagleton and **H. H. Gnuse Jr.** have been appointed assistant chief power engineers for the Aluminum Company of America. Mr. Eagleton also directs the hydraulic engineering section and Mr. Gnuse, the electrical engineering section.

Dean L. Lashbrook has been named acting chief structural engineer of Bellman, Gillett & Richards, Toledo architects. He was chief structural engineer for Burns & Roe of Michigan.

William H. Claire is western representative of Homer Hoyt Associates, land economists and market analysts of Washington, D. C. A 1936 graduate of the University of Colorado, Mr. Claire is chairman of the ASCE Committee on Urban Renewal; and former assistant executive director of the Los Angeles community redevelopment agency.

William R. Kimball, Jr., president of Kimball Manufacturing Co., San Rafael, Calif., has been elected a director of the Utah Construction and Mining Co. He is also a director of Systron Electronics Corp. and has been a member of the White House conferences on small business problems.

Martin R. Haley has been named president of the Walter Butler Engineering Co., St. Paul and Miami consulting engineers. He has been with the company for ten years.

John Cockrell has been promoted to assistant vice president of the J. A. Jones Construction Co., Charlotte, N. C. He came to the company in 1954 to work on the Ohio Turnpike and since then has been manager of highway construction operations in Ohio and Indiana.

Raymond B. Aufmuth, chief engineer of the H. K. Ferguson Co. has been elected to the company's board of directors. In his 13 years with Ferguson, he has worked on the design of such projects as Detroit's Grand Circus Park, Standard Oil Co.'s laboratory in Cleveland and the Gulf States Paper Corp.'s pulp mill in Alabama.

Ralph L. Gray is the newly elected chairman of the board for Armco Steel Corp. **Logan L. Johnston** has been chosen president, succeeding Mr. Gray. Mr. Gray, an engineering graduate of Washington University has spent his entire career in the steel industry. He headed the Sheffield Steel Corp., a subsidiary of Armco, for 24 years. In 1954 he was elected executive vice president of Armco. Mr. Johnston came to the company in 1927 and in 1952 was elected vice president in charge of distribution.

Frank E. Dolson has been elected president and director of the St. Louis County Water Co. after serving as vice president and manager of distribution for a year. He joined the company in 1931 after graduating from Washington University as a civil engineer.

Herbert M. Lowenstein and **John L. Menson** have been elected vice presidents of Combustion Engineering, Inc., New York City manufacturers of steam generation equipment. Mr. Lowenstein, former director of engineering project design, became associated with the firm in 1924 after working as field engineer for the Bureau of Yards and Docks. Mr. Menson, the author of several technical papers, has been Combustion's director of engineering field operations. He has been with the company for 24 years.

Lawson D. Matter has joined the Philadelphia consulting engineer firm of Albright & Friel, Inc., as their Harrisburg representative. He has been chief engineer of the water supply section for the Pennsylvania Department of Health.

The Photographic Survey Corp., Ltd., Hunting Airborne Geophysics, Ltd., and **Hunting Technical & Exploration Services, Ltd.,** have been combined into the firm of Hunting Survey Corp., Ltd., with offices in Toronto.

Joseph F. Jelley, retired Rear Admiral and former chief of the Navy's Bureau of Yards and Docks, has joined Jennings-son, Durham & Richardson, Omaha consulting engineers. His headquarters will be in Colorado Springs, where he will also continue his own consulting practice.

Two ways to lower compaction costs with fast, high-density Lima Roadpackers

- ***Compact to 100% density in one pass***—often possible with Lima Roadpackers.
- ***Lay fewer courses***—Roadpackers compact even 10 and 12-in layers in minimum number of passes.

High-production Roadpackers speed construction of highways, parking lots, airfields and earth-fill dams. Vibratory compaction works from bottom to top; fills voids, eliminates shoving. Roadpackers work forward or in reverse. Compact in varying widths and speeds. Travel on-the-job or over-the-road at highway speeds.

Lima Roadpackers are extremely popular with cost-conscious contractors everywhere who are interested in both high performance and low maintenance. Vibrator units are completely sealed, self-lubricated. No external moving parts; no daily maintenance required.

Two Model Roadpackers now available

MODEL D—Six hydraulically controlled vibrator shoes compact up to 600 tons per hour in a 13 ft.,1 in. swath. End shoes fold up for narrow width compaction path or highway travel at speeds up to 30 mph. Compacts from 20 to 95 feet per minute using 4, 5 or 6 shoes.

SUPER—More than doubles compaction performance of any multiple-shoe vibrator machine. Designed for really big jobs. Two rows of six vibrator shoes, hydraulically controlled, compact "tough-spec" materials on production basis from 26 to 268 feet per minute in widths to 15 ft. Highway travel to 24 mph; power brakes and steering, tandem rear drive.

Get compaction cost-cutting facts from your nearby Lima distributor or write to Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio.

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BALDWIN · LIMA · HAMILTON

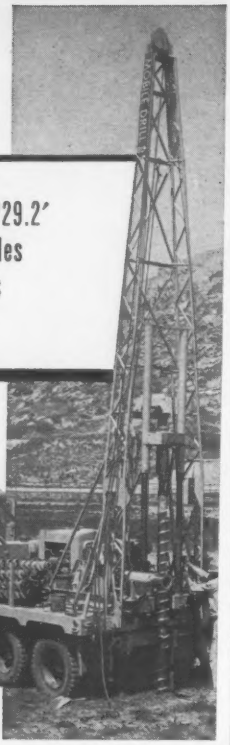
Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

605

"well satisfied with production and footage"*

*Leland J. Walker

MOBILE B-52 PACEMAKER augers 229.2′ through clay and sandstone, samples and performs 53 penetration tests in 16.5 hours!



Leland J. Walker, owner of the Northern Testing Laboratory in Great Falls, Montana, is well satisfied with his new hydraulic-powered B-52 PACEMAKER. According to Mr. Walker, "*The main reason we bought this drill was its versatility.*" His PACEMAKER, mounted on a 2½-ton 6x6, is equipped for diamond coring, wash boring and drilling with straight augers or exclusive Hollow Stem Augers. It's the ideal rig for areas where it is "*necessary to be prepared for almost any type of material.*"

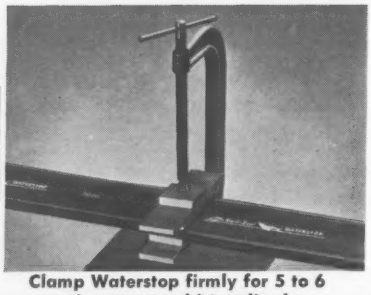
MOBILE DRILL

PACEMAKER pays off in production. Write today for specifications and prices...

MOBILE DRILLING, INC.
960 N. Pennsylvania Street
Dept. 8
Indianapolis 4, Indiana

Now... A Rubber Waterstop that can be spliced in just 6 minutes

Apply Kwik-Kem bonding chemical to prepared surface.



Clamp Waterstop firmly for 5 to 6 minutes... and it's spliced.

Gates, leader in Waterstop since 1935, offers the Kwik-Seal splice that is *chemically bonded*, using simple tools—no vulcanizers, no molded parts. This new splicing method cuts labor costs, speeds the job.

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☐ I would like a splicing demonstration.

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Gates Kwik-Seal Waterstop

. . . Men and Jobs

Public Works

Russell A. Stephenson, district engineer for the Bureau of Public Roads, Montana Division, has been promoted to regional engineer at Portland, Ore. He had been with the Montana Highway Department from 1931 to 1946, first as bridge engineer and later as district engineer.

Earl W. Hampton has been appointed California Deputy Chief, Architecture and Engineering, a new post created by the state. He has been in charge of the Division of Architecture's design and planning service.

Thomas J. McCoy has been named acting executive director of the Philadelphia Housing Authority. He has been assistant executive director since 1953 when he came to the Authority from the Public Housing Administration. **Walter E. Allessandroni,** former executive director of the Philadelphia Authority moves to his new post as U. S. Attorney for the Eastern District of Pennsylvania.

C. F. Kellam, Assistant Richmond District Engineer at Petersburg, Va., has been promoted to District Engineer at Salem, Va. He replaces **Frank A. Howard** who resigned to become Engineer Director of the Virginia Road Builders Association.

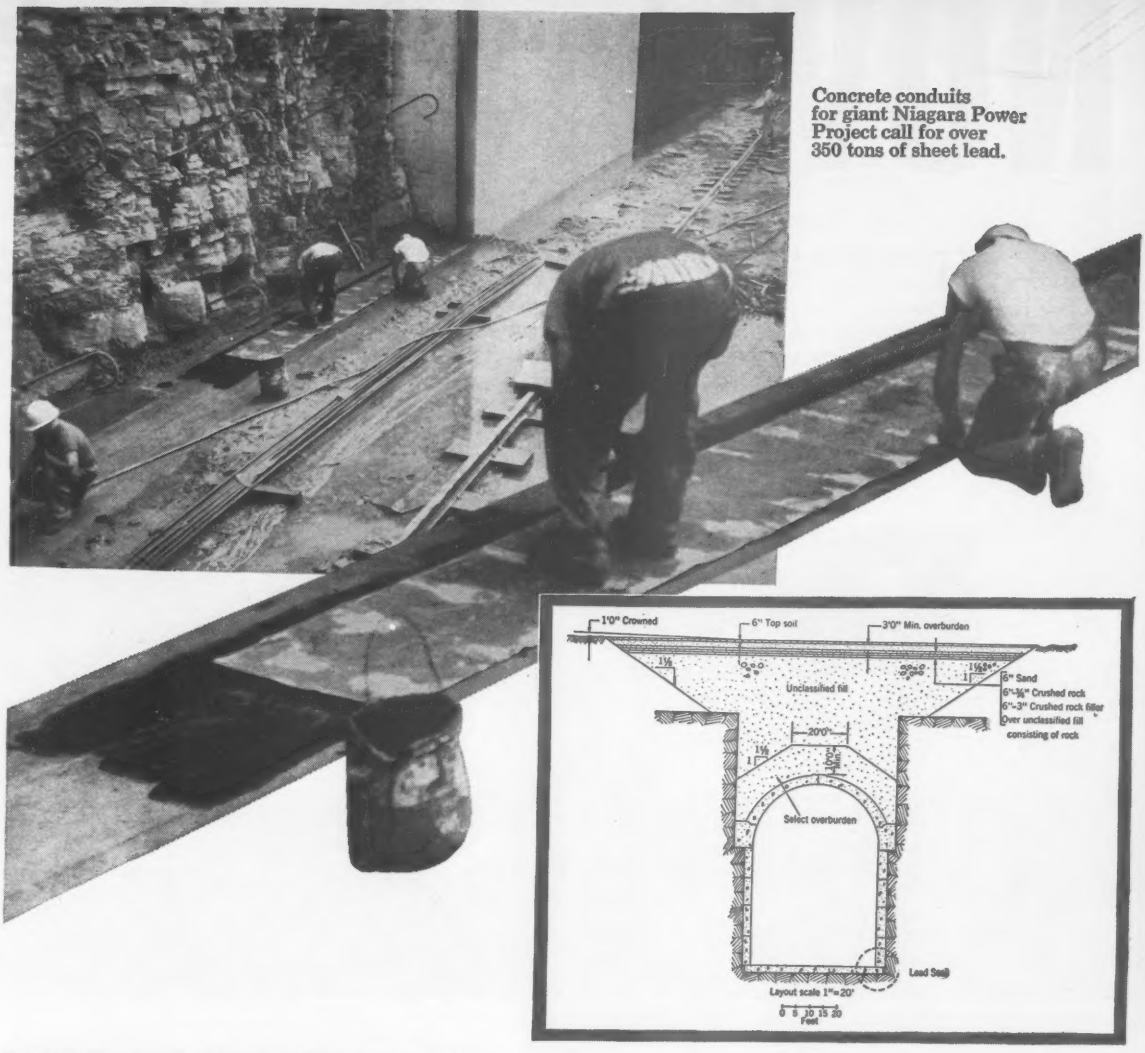
Col. H. K. Eggleston has been assigned to Washington, D. C., where he is Assistant Chief of Engineers for Military Supply. Since 1958 he has been Deputy Commandant for Logistics, Research and Doctrine at Fort Lee, Va. He replaces **Col. H. L. Fox,** who has been Acting Assistant Chief for Military Supply since last summer. Col. Fox moves to Atlanta, where he is Deputy Division Engineer, South Atlantic Division.

Maj. Ellsworth F. Smith is now district engineer at Washington, D. C. for the Army. He succeeds **Maj. Gordon H. Shumard** who has been transferred to Saigon, Vietnam.

Retirements

George T. Donoghue, general superintendent of the Chicago Park District retired after serving with the district since 1933. Mr. Donoghue, who will be succeeded by assistant general superintendent **Daniel L. Flaherty,** will be retained as a consultant.

Thomas J. Montgomery has retired after 27 years with the Cincinnati Department of Public Works. He has served as assistant superintendent of highway maintenance, acting superintendent of the Cincinnati General Hospital, principal construction engineer, and since 1949 as city engineer.



Concrete conduits for giant Niagara Power Project call for over 350 tons of sheet lead.

LEAD lubricates, seals arteries of Western World's largest power project

Two immense concrete conduits—each four miles long, sixty-six feet high, and forty-six feet wide—form the arteries of the largest hydroelectric development in the western hemisphere—the Niagara Power Project at Niagara Falls, N. Y. To protect these conduits against harmful shifting and settling, sheet lead, 1/16 in. thick, is installed between the base and side walls to provide a lubricating surface on which these massive concrete walls can move. This sixteen mile cushion of lead, over three hundred and fifty tons of it, will also effectively seal the joint.

Why lead? Because only lead provides *all* the properties needed for this difficult job. It will not crack and forms an effective lubricating seal between the conduit walls and base under conditions of movement and settlement. It is durable and noncorrosive and forms an even seat for the walls that is strong enough to carry the necessary load.

Lead can play an important part in the success of *your* next project. Because of its malleability, lubricity, durability, corrosion resistance, lack of resilience, and vibration-damping properties, lead is noted for its solutions to a wide range of construction problems.

For additional information write to: LEAD INDUSTRIES ASSOCIATION, 60 East 42nd Street, New York, N. Y. 2163

LOOK AHEAD WITH LEAD

NOW haul two loads ...with LW

Here's the best way ever developed to cut earthmoving costs: LW TANDEMS. *You can now pull and operate TWO scrapers behind any electric-control 'Pull* prime-mover.* You get 100% more capacity at only about 30% more cost!

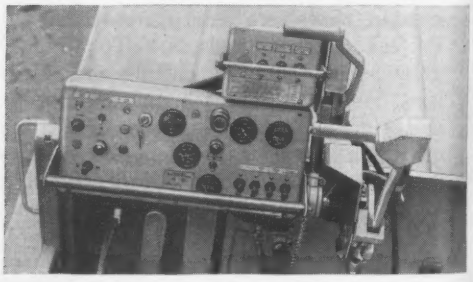
The tandem concept is not new: experiments toward this earthmoving ideal have been underway for decades. Only now, however, *and only from LW,* has a practical tandem, in a practical size-range, been available.

"C" Tandem loads 36 yd in 40 to 55 seconds

At Pinole, California, Contractor Al Periera used this 270-hp C Tournapull® with tandem C Fullpak® scrapers to move 36 *yards per cycle.* In pre-ripped clay, with a 191-hp pusher, C Tandem needed only 40 to 55 seconds to load both bowls heaping full. Tandem kept pace with single scraper on same job, climbed 18% grades, used only 13 more gallons of fuel per shift.

Electric control solves problem of operating second scraper

Main reason ONLY LW offers tandem scrapers is LW electric control. These buttons operate bowl-lifts, aprons, and tailgates . . . top row for rear scraper, bottom row for front. Moving a button closes circuit, sends power from engine mounted generator, along wires to desired control motor. Unlike mechanical or hydraulic power, electricity arrives instantaneously, with no loss of power, and with no extra power source needed.



LW Distributors everywhere can now convert your present 'Pulls to tandem operation, or equip you with *new* 1960 'Pulls already prepared for tandem use. See *your* LW Distributor soon, for full details!

every trip TANDEMS

Making the breakthrough possible is exclusive LW electric control. This system sends working-power any distance via simple wire, thus solving the problem of operating a second scraper as efficiently as the first. And LW has developed a universal-swivel hitch that permits complete maneuverability and handling ease of the tandem.

YOU SAVE THREE WAYS:

1 — Original investment:

You double your capacity, but pay only for a second scraper and incidental hitch and installation. You *save* the price of the second prime-mover!

2 — Operating costs:

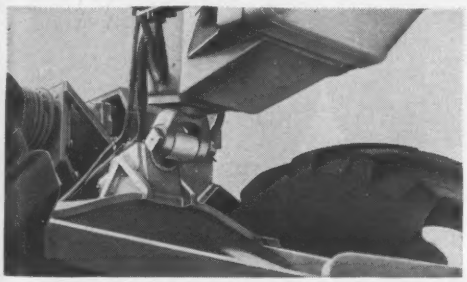
One operator handles both scrapers. Your only "extra" operating cost is for a few more gallons of fuel per shift!

3 — Maintenance:

Upkeep is *almost the same* for "singles" as for tandems! You have 2 more tires to maintain, plus nominal maintenance of the second scraper, but there is no extra engine, no extra transmission or final drive to care for!

Big, rugged hitch permits full maneuverability

Universal swivel-hitch joining front and rear scrapers lets tandem U-turn, back-up, perform any other maneuver possible with single scrapers, with no jack-knifing. Hitch base is welded to reinforced push-block frame of front scraper. Rear scraper's electric leads "plug in" to jacks on front scraper. Hook-up is so simple that once installed, you can change from single to tandem operation, or back, in less than half an hour.



YOU ENJOY THESE ADVANTAGES:

1 — You need less pusher-power:

Only one of the tandem scrapers loads at a time, so you don't need "super" pushers or tandem-pushers. You save pusher positioning time, too.

2 — Haul roads take less abuse:

Ton-for-ton, tandems punish haul roads *less* than single scrapers of equal capacity. And there's less congestion and delay with fewer units.

3 — You get more adaptability:

You can meet changing job conditions by hitching or unhitching the "extra" scraper on short notice. And you can still interchange your basic scraper for a 'Pull Rear-Dump, whenever needed.

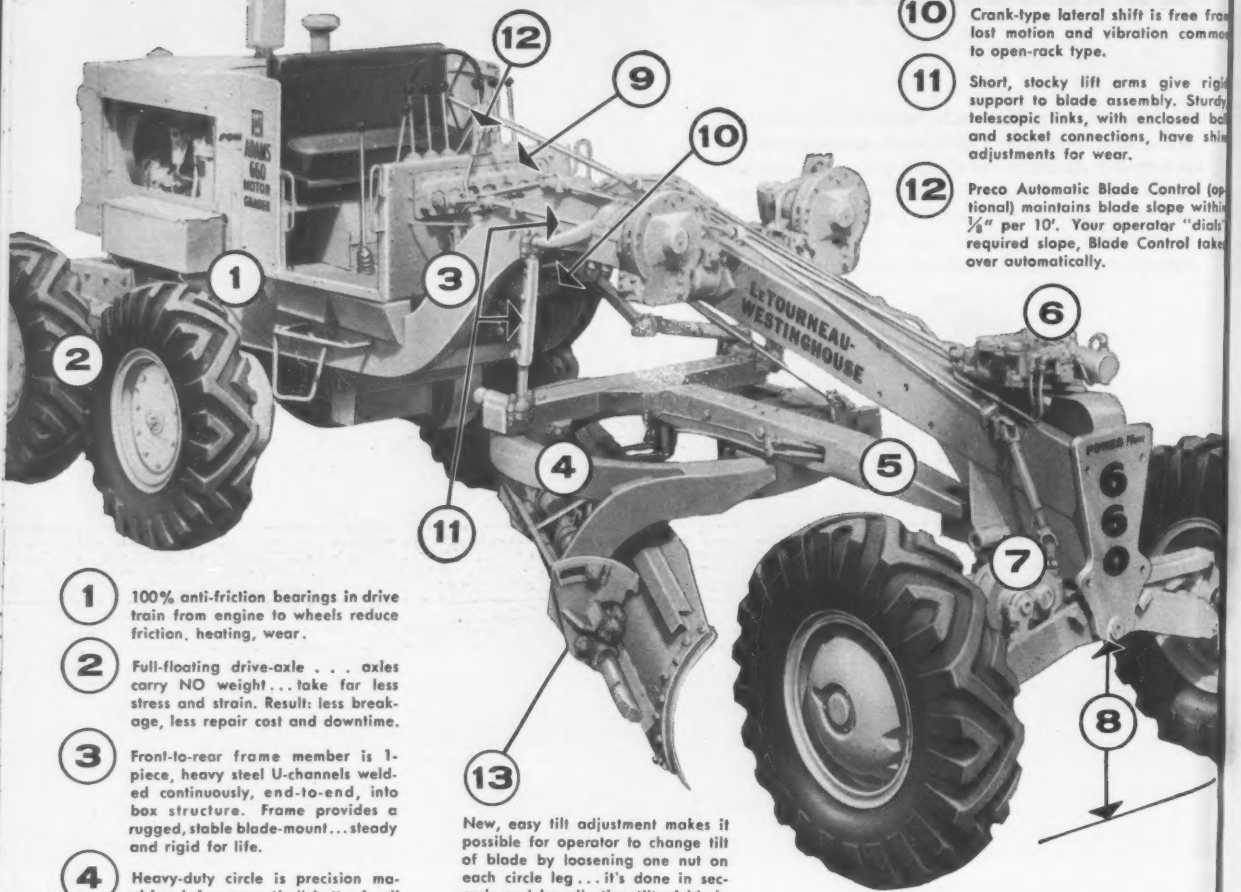
*Trademark TP-2256-DC-2

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

COMPARE LW



1 100% anti-friction bearings in drive train from engine to wheels reduce friction, heating, wear.

2 Full-floating drive-axle . . . axles carry NO weight . . . take far less stress and strain. Result: less breakage, less repair cost and downtime.

3 Front-to-rear frame member is 1-piece, heavy steel U-channels welded continuously, end-to-end, into box structure. Frame provides a rugged, stable blade-mount . . . steady and rigid for life.

4 Heavy-duty circle is precision machined for smooth "chatter-free" operation. The *big* 63"-diameter circle assures accurate control of cut.

5 Strong T-shaped drawbar gives firm circle support . . . for accurate blading in all positions.

6 With power steering, operator exerts only slight pressure on steering wheel, and hydraulic power does the work. Yet, "road feel" is retained. Power-steering system has its own hydraulic pump.

7 Gear-driven leaning-wheel mechanism is enclosed to give protection against dirt. Wheels hold set position . . . require no safety lock-pin for high-travel-speeds, or when using front-end attachments.

8 You have up to 28" front-axle clearance, depending on tire size. This prevents axle from bulldozing high windrows, lets grader come up out of deep ditch-cuts without front-axle dragging the shoulders.

9 Blade controls operate through three-jaw clutches that mate without shock or kick-back. Joint-free construction of power box eliminates oil leakage on cab floor.

10 Crank-type lateral shift is free fro lost motion and vibration comm to open-rack type.

11 Short, stocky lift arms give rigi support to blade assembly. Sturdy telescopic links, with enclosed ba and socket connections, have shi adjustments for wear.

12 Preco Automatic Blade Control (op tional) maintains blade slope withi 1/8" per 10'. Your operator "dials" required slope, Blade Control take over automatically.

13 New, easy tilt adjustment makes it possible for operator to change tilt of blade by loosening one nut on each circle leg . . . it's done in seconds, and by adjusting tilt of blade for light or heavy grading, operator does more and better work.

Efficient LW grader attachments include: Ateco ripper, scarifier, bulldozer, push-plate, Jebco Elegrader and Jebloader, V-type snow plow, and standard or rotary-type snow wing.

LW advantages with any other grader

...you'll be convinced they give you more for your money!

Best way to judge a grader is to compare it . . . against any machine in its class. Do this with LeTourneau-Westinghouse graders; you'll find they give you *more money-saving, more profit-boosting features than any other grader on the market.* Others may offer *some* of these advantages, but you get all of them in LW graders.

Compare transmissions:

Other graders offer transmissions with 6 to 10 speeds; LW graders have 15 . . . 8 forward, 4 reverse, and 3 optional creepers. With *more* full-power gear-ratios you can handle most grading jobs at higher speed. Result: you can do up to 28% more blade work. LW's faster *back-up* speeds save time on shuttle-type work. In addition, you save time getting to and from a job, because top *travel* speeds on LW graders are up to 5 mph faster than on most other graders. On LW POWER-*Flow*® models you get *infinite* speed ranges, with torque-converter transmissions *automatically* matching speed and power to any load.

Compare engines:

You choose from either General Motors or Cummins power plants for your LW graders, to standardize your fleet, lower your parts inventory and service costs. No matter which engine you choose, it is *mounted on rubber,* to reduce vibration, increase operator comfort.

Compare construction:

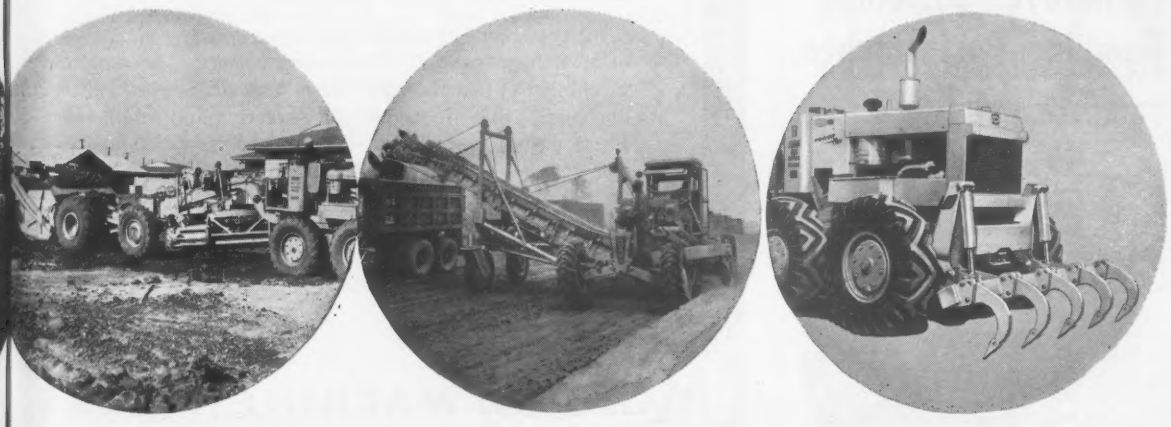
LW's one-piece box frame is *continuous welded, end to end.* LW rear axles *carry no weight;* they "float" on anti-friction bearings to transfer *full* power to drive-wheels. High-arch, front axle is *welded bar-and-plate* for long life. ALL gears and shafts run on anti-friction bearings. And the big 63" blade-circle is precision-machined . . . top, bottom, and inside. Compare *these* strength features to those of ANY other grader.

Compare operation:

LW controls are grouped for "natural" hand-motions to get fastest blade positioning. All average blade positions can be obtained from the cab. Blade movement is *fast* . . . you can switch from high bank-cut to deep ditch-cut in less than a minute! Positive-acting hydraulic brakes operate at light touch of convenient pedal. What's more, on LW graders, your operator has clear view ahead, *and* can see both ends of the blade . . . where visibility is most important. He has this visibility *whether he's sitting or standing!*

Check the features illustrated here, then take the next step . . . ask us to *show* you an LW grader in the size you need. Seven models from 67 hp to 190 hp. We'll arrange for a demonstration at your convenience . . . with your operator at the controls. A phone call or a short note is all it takes!

*Trademark G-2106-G-2



LW

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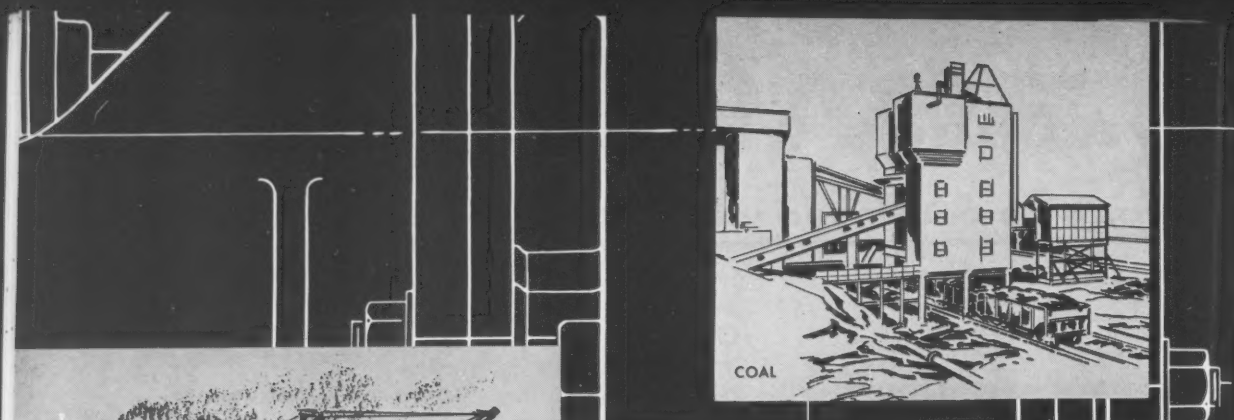

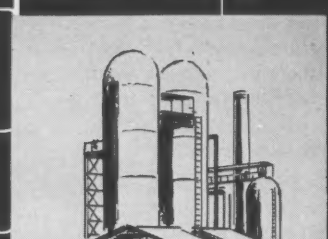

MORRIS
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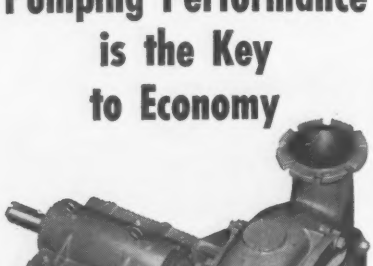
Wherever Sustained Pumping Performance is the Key to Economy



Type CK Solids Pump. A heavy duty, low speed solids pump with extra wide clearance, designed especially to handle fluids containing random size solids and heavily abrasive materials.

If you are pumping solids at any consistency that is fluid, there is a Morris Pump that will do the job dependably and economically.

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Field testing has evolved the most exacting engineering of component parts . . . the correct selection, forming and machining of just the right alloys for each application . . . and pumps that are rugged, long-wearing and trouble free. Every part of every Morris Pump is accessible for fast, routine service—holding preventive maintenance to a minimum.

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Obituaries

F. E. Schilling, 72, secretary of the Building Trades Employers Association and a former vice president of the Turner Construction Co. He retired from the organization in 1956 after starting with them in 1908 as a timekeeper. In 1928 Mr. Schilling became a vice president in the company and in 1935, a director. He was on the executive committee of the Building Contractors and Mason Builders' Association and was a director of the Concrete Industry Board.

Ronald M. Wilson, 68, inventor and mapmaker. Mr. Wilson, who retired three years ago, spent 40 years with the U. S. Geological Survey, first as topographical engineer and later as geodetic computing chief. He aided in making his bureau the first surveying organization to use electric calculating machines for trigonometric computing. He is also the designer of the first precise photoalidade used extensively in World War II for Air Force reconnaissance mapping.

Charles W. Nicol, 71, senior partner in the Chicago architectural firm of Nicol & Nicol. He designed 1,260 buildings valued at $200 million.

Clifford C. Jones, Sr., 73, retired Louisville contractor.

Walter E. Joyce, 72, retired associate of D. B. Steinman, New York City consulting engineer. He joined the Steinman office in 1924 and among his projects are the design of the Kingston-Rhinecliff Bridge and the design and erection of cables for the Mackinac Bridge in Michigan. While serving as a resident engineer for John A. Roebling's Sons Co., he supervised the design and construction of the cables for the George Washington Bridge and Golden Gate Bridge.

Young J. Wright, 50, superintendent of construction for the Washington, D. C., Department of Sanitary Engineering. He directed the $12-million addition to the Blue Plains treatment plant, the new Piney Branch relief sewer and the Brentwood Reservoir, now under construction.

Daniel J. Hennessy, 76, retired president and director of the Jamaica, N. Y., Water Supply Co.

Charles Herbert Anderson, 94, retired professor of engineering at the University of Kentucky.

Joseph Moroni Tracy, 75, former state engineer for Utah.

Arthur N. Oviatt, 93, architect who worked with the late Frank Lloyd Wright, Louis Sullivan and Charles F. Schweinfurth.

George B. Roth, 66, Philadelphia architect and partner in Roth and Fleisher.

W. C. Mahone, 49, owner of the Mahone Construction Co., Lancaster, Texas.

Ralph Leroy Parshall, 78, irrigation engineer and inventor of the Parshall flume. He was on the faculty of Colorado State University until his retirement in 1947 but continued as a special lecturer and researcher. He was awarded the Colorado Engineer Council's Gold Medal Award in 1949 for his work in irrigation development in the West.

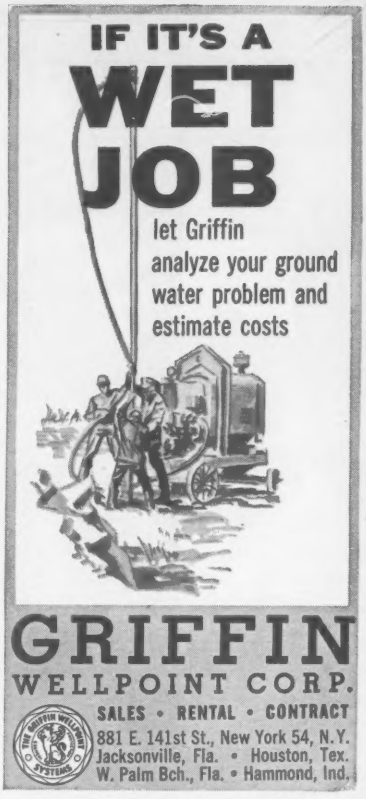
Albert Nelson Wold, 71, Minnesota safety engineer and co-founder of the Minnesota chapter of the American Society of Safety Engineers. He was associated with the Minnesota and Ontario Paper Co. where he worked on industrial safety and insurance. A 1912 graduate of the University of North Dakota Law School, he was a 30-year member of the National Safety Council.

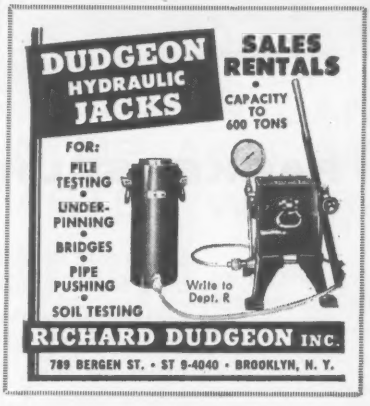
Lawrence Vanderbilt Campbell, 71, retired civil engineer with the California Highway Department since 1922. He had also worked for the Nevada Highway Commission and the Montana Highway Commission as office engineer.

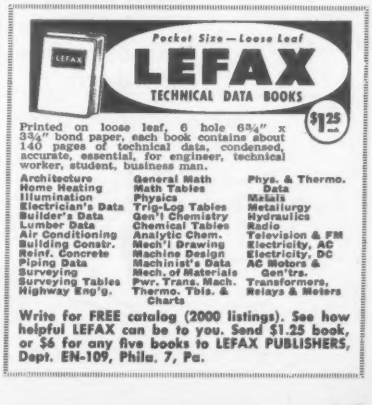
Norman Holmdahl, former chief electrical engineer at Grand Coulee Dam. He was noted for his quick action in preventing further damage in a 1952 flood when he waded through the dam's flooded tunnels to reach equipment that would open the outlet gates.

Conrad H. Wilkinson, 47, engineer with the Philadelphia District of the Army engineers. He was also on the faculty of Drexel Institute of Technology.

Daniel Joseph Brumley, 94, retired chief engineer for the Chicago Terminal Improvements, Illinois Central Railroad. His 40-year career with the railroad industry included ten years with the Louisville & Nashville Railroad, where he was division engineer. After he retired in 1935, he served for several years with the American Railway Engineering Association in revising the association's manual.







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Books

Foundations for Structures

FOUNDATION DESIGN AND PRACTICE—By J. H. Thornley. 298 pp. Columbia University Press, New York, N. Y. $15.

Designers and contractors, and even prospective owners of structures, will find this book on foundations worth careful study. Written by a foundation contractor—the author is president of Western Foundation Corp.—it is filled with suggestions for improving foundation design and construction and avoiding trouble.

The portions of special interest to prospective owners include chapters on choosing a site and on subgrade investigations. The author advises owners: "If there is any choice as to the site of your next project, pick out your designing engineer when you decide upon your real estate broker." The pitfalls that may be encountered when site investigation and knowledge of foundation economics are inadequate and the possible high costs to the owner in these cases are soon made clear in the text.

Though different kinds of foundations are discussed in the book, much greater attention is paid to piles than to other types. Engineers should find particularly valuable the description of uncased concrete piles and a comparison of their characteristics with those of light-shelled cast-in-place concrete piles. Uncased piles have been used extensively in Europe; the author believes that U.S. designers should give them greater consideration.

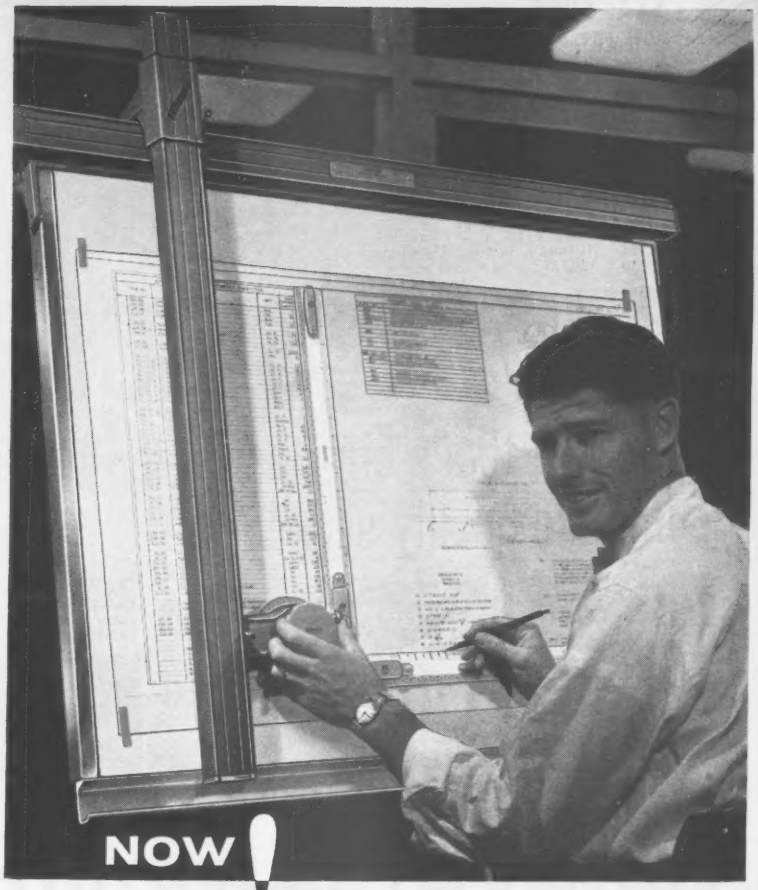
An especially valuable feature of the book is a table in which different foundations are compared. Called an elimination table, it enables a designer to narrow his choice of foundation quickly by excluding those that lack the characteristics needed to meet the peculiar conditions of his structure.

Throughout the book, the author stresses the economics of foundation construction. He also includes information on specifications and contracts.

Insulation for Extremes

INDUSTRIAL THERMAL INSULATION—By A. C. Wilson. 295 pages. McGraw-Hill Book Co., New York, Toronto, London. $9.

This book differs from others on thermal insulation in that it deals principally with insulation for piping, equipment and structures in the temperature ranges above the boiling point and below the freezing point of water. Other books usually concentrate on the atmospheric range and cover such



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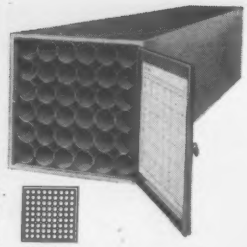
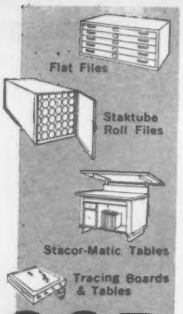


9-TUBE 4⅜" ID
16-TUBE 3⅜" ID
36-TUBE 2¼" ID
81-TUBE 1½" ID



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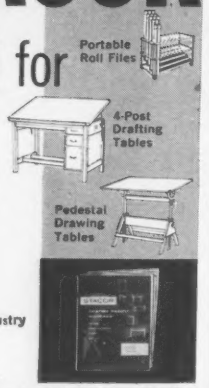

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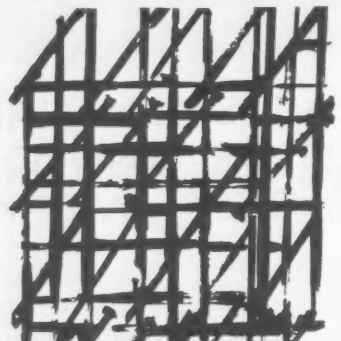

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topics as domestic heating and office and home air conditioning. The new book deals with temperatures up to about 2,000 F.

The early portions of the book are an exposition of the principles and history of thermal insulation. The author not only presents the necessary mathematical formulas but also interprets them for useful application in industrial situations.

The book describes materials available for hot and cold applications and discusses methods of application. It shows how to handle condensation problems in low-temperature work. And it gives detailed specifications for low-temperature insulation in buildings, as well as for high and low-temperature insulation for piping and equipment.

Reports and Pamphlets

COEFFICIENTS FOR DESIGN OF CYLINDRICAL CONCRETE SHELL ROOFS—Portland Cement Assoc., 33 West Grand Ave., Chicago 10, Ill.

SANITARY PROTECTION OF ATMOSPHERIC AIR: PURIFICATION OF INDUSTRIAL DISCHARGE GASES FROM SUSPENDED SUBSTANCES—160 pp. Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. $3.00.

DESIGN CRITERIA FOR RESIDENTIAL SLABS-ON-GROUND—Pub. 657. National Research Council, 2101 Constitution Ave., Washington 25, D. C. $2.00.

PROCEEDINGS OF THE THIRTEENTH INDUSTRIAL WASTE CONFERENCE—Series No. 96. Engineering Extension Department, Purdue University, Lafayette, Ind.

ALGAE IN WATER SUPPLIES—PHS Pub. No. 657. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

DIGEST OF LITERATURE ON DIELECTRICS—Volume 22. National Research Council, 2101 Constitution Ave., N.W., Washington 25, D. C. $5.00.

PROCEEDINGS OF THE SEVENTH HYDRAULICS CONFERENCE—Bulletin 39. State University of Iowa, Iowa City, Iowa.

AIRPORT BUILDINGS AND APRONS—Second edition. International Air Transport Association Technical Secretariat, 1060 University St., Montreal 3, P. Q., Canada. $2.00.

1957 CENSUS OF GOVERNMENTS: FINANCES OF MUNICIPALITIES AND TOWNSHIP GOVERNMENTS—455 pages. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. $2.25.

HYDRAULICS RESEARCH IN THE UNITED STATES, 1959—Pub. 227. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. $1.25.

IMMUNIZATION INFORMATION FOR INTERNATIONAL TRAVEL—Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 30¢.

RE-ENTRY ABLATION OF REINFORCED PLASTICS—Product Information, General Electric Co., Missile and Space Vehicle De-

partment, 3198 Chestnut St., Philadelphia 4, Pa.

WIND PRESSURES IN VARIOUS AREAS OF THE UNITED STATES—by G. N. Brekke. Report No. 152. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 15¢.

1959 HEAT TRANSFER AND FLUID MECHANICS INSTITUTE: PREPRINTS OF PAPERS—Stanford University Press, Stanford, Calif. $7.50.

PROCEEDINGS—NATIONAL CONFERENCE ON AIR POLLUTION, 1958—Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. $1.75.

THE STUDY OF ECONOMIC GROWTH: THIRTY-NINTH ANNUAL REPORT — National Bureau of Economic Research, Inc., 261 Madison Ave., New York 16, N. Y.

CEMENT-SOIL STABILIZATION—Bulletin 198. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

INDEMNIFICATION OF ATOMIC ENERGY ACTIVITIES AND OPERATIONS OF ADVISORY COMMITTEE ON REACTOR SAFEGUARDS 1958-1959—Reports and Industrial News Branch, Division of Information Services, U. S. Atomic Energy Commission, Washington 25, D. C.

INTEGRATION—THE FUTURE OF HOMEBUILDING—Housing Associates, 3018 Kensington Road, Cleveland Heights 18, Ohio. $6.50.

AN EXPERIMENTAL INVESTIGATION OF PROTECTIVE FILTERS—by G. E. Bertram. Harvard Soil Mechanics Series No. 7. The Gordon McKay Library, Pierce Hall, Harvard University, Cambridge 38, Mass. 60¢.

STABILITY ANALYSIS OF SLOPES WITH DIMENSIONLESS PARAMETERS—by Nilmar Janbu. Harvard Soil Mechanics Series No. 46. The Gordon McKay Library, Pierce Hall, Harvard University, Cambridge 38, Mass. $3.00.

ATOMIC POWER AND ENERGY RESOURCE PLANNING—by Richard A. Tybout. 98 pages. Bureau of Business Research, Ohio State University, Columbus, Ohio. $2.00.

NATIONAL WATER QUALITY NETWORK: Annual Compilation of Data—P.H.S. Publication No. 663. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. $1.50.

HIGHWAY STATISTICS, 1957—200 pages. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. $1.25.

COSTS OF NUCLEAR POWER—Office of Technical Services, Dept. of Commerce, Washington 25, D.C. 50¢.

COMMUNITY FACILITIES: A LIST OF SELECTED REFERENCES — Bibliography Series No. 4. National Housing Center Library, 1625 L St., N. W., Washington 6, D.C.

TRIP GENERATION AND URBAN FREEWAY PLANNING—Bulletin 230. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $2.40.

LAND ACQUISITION—1959—Bulletin 232. Highway Research Board, 2101 Constitution Ave., Washington, D. C. $2.40.

WELDING NUCLEAR POWER PIPING—American Welding Society, Department T., 33 West 39th St., New York 13, N. Y. $1.50.

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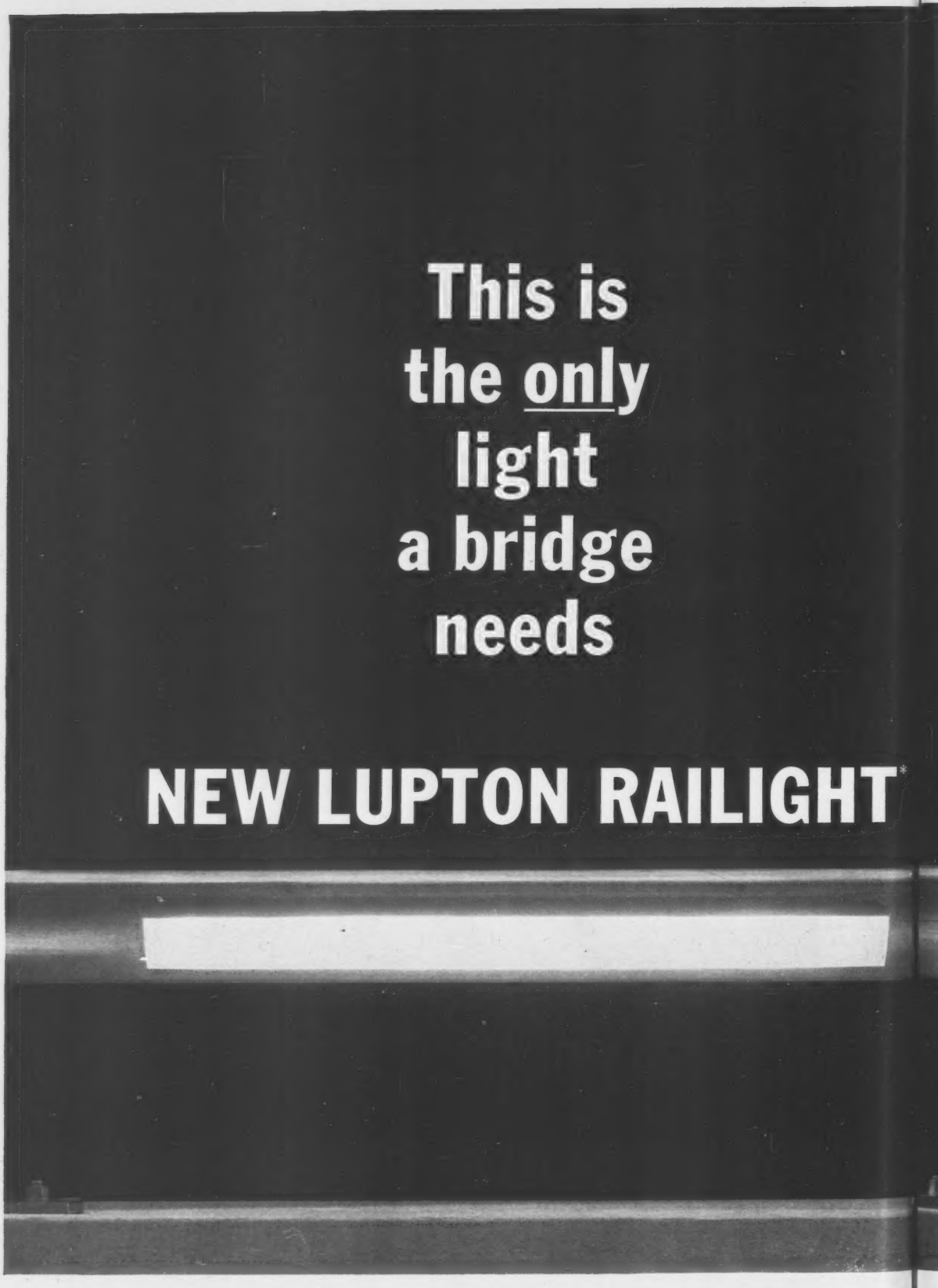
City_____ Zone____ State_____

ENR-260


This is
the only
light
a bridge
needs
NEW LUPTON RAILIGHT*

New LUPTON bridge railing has built-in General Electric luminaires

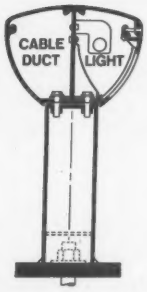
New LUPTON RAILIGHT* is today's most advanced concept in roadway lighting. Now available in standard units for all roadway installations, it offers you these significant advantages: greater driving safety from uniform low-level light focused directly on the road; unlimited opportunity for road railing design; savings in initial cost, operation, and maintenance.

Supplementary advantages are the elimination of glare; the confining of light to the road only; a clear view of roadway limits; increased effectiveness in fog, rain, or snow; efficient use of candle power.

And like every other LUPTON bridge job, installation is simple, because two men, with wrenches as their main tools, can install the lightweight aluminum parts. Maintenance is just as simple, because this non-rusting aluminum never needs painting—almost never needs replacement. And the lights themselves are handy for maintenance.

Write today to Michael Flynn Manufacturing Company's main office for more information on LUPTON RAILIGHT. Find out in detail how advantageously it can work for you.

Trademark



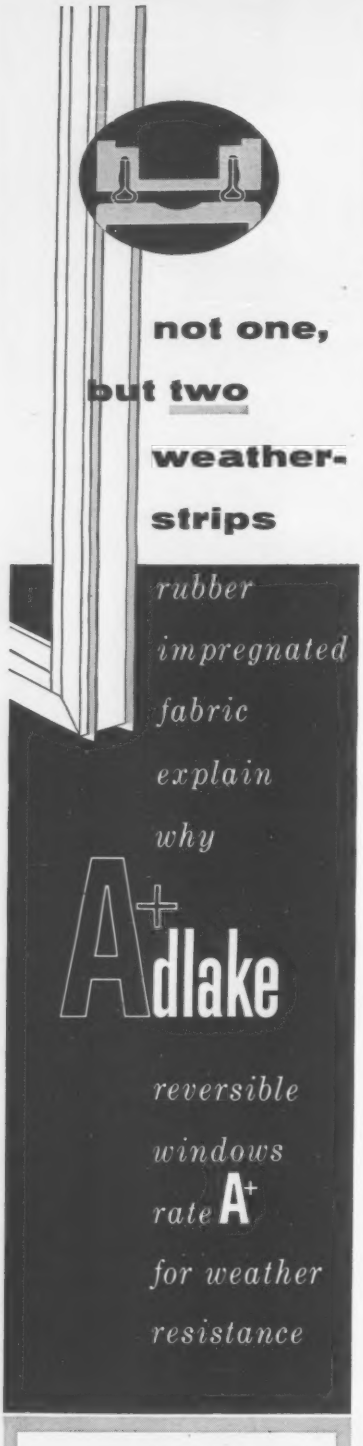
This cross section of LUPTON RAILIGHT shows the cable raceway, and how easily the top can be removed for maintenance with use of a simple special tool. A rigid shield of plastic protects the luminaire. Other top rail features include a reinforcing spine, and drain holes for condensed moisture.

LUPTON® RAILIGHT*

MICHAEL FLYNN MANUFACTURING COMPANY

ALUMINUM DIVISION

Main Office and Plant:
700 EAST GODFREY AVENUE, PHILADELPHIA 24, PA.....Fidelity 2-5500
Sales Offices:
51 EAST 42nd STREET, NEW YORK 17, N.Y.....YUkon 6-6020
937 RADCLIFFE ROAD, TOWSON, MD.....VAlley 3-2090
4232 HERSCHEL STREET, DALLAS 19, TEXAS.....LAkeside 6-8757
West Coast Plant & Office:
CITY OF INDUSTRY, CALIF. (LOS ANGELES CO.).....CUmberland 3-6407



See Sweets file 17a/Ad, or write for 36-page catalog of non-residential aluminum windows and curtain walls.

The Adams & Westlake Company
Dept. K-4902, Elkhart, Indiana

Pricing of metal is a problem on . . .

Akkar Plains Reservoir, Lebanon

Unsettled conditions in the Middle East complicate the construction of the 1 mg, 6,120x2,080x6 meter reinforced concrete main water storage reservoir on the Akkar Plains in Lebanon. This is the second time the work has been let out for bid, and the Lebanese government has had to "guarantee" the security situation so the work can proceed. Malcolm Pirnie Engineers, New York City, is the consultant.

The award at LL 183,909 to Nader & Antoine Sfeir, Beirut, Lebanon, is 29.3% under the engineer's estimate. The exchange rate is approximately (in Lebanese pounds) LL 3.15 to the dollar.

Since the use of metal is still quite recent in Lebanon, contractors have difficulty in arriving at good unit prices for installed metal. The practice of the Lebanese government is to include reinforcing steel in the unit price of concrete.

Concrete must attain a minimum compressive strength of 3,000 psi at 28 days.

Cast iron pipe must conform to ASA standards A21.6 or A21.8.

The bidding went like this:

1C	Nader & Antoine Sfeir, Beirut, Leb	LL 183,909
2	Emile N. Khlatt	201,357
7	Najib Hatem & Co.	250,467
EE	Malcolm Pirnie Engineers, N. Y. C.	260,000

Bids: 10-13-59 Items	Unit	Quantity	Unit Prices 1C	 2
Excavation, earth	cm	2,500	LL2.00	LL3.00
rock	cm	1,500	4.00	3.00
Concrete, cl 250	cm	15	60.00	60.00
cl 350	cm	1,200	95.00	120.00
Stl pipe, furn 8", instal 12"	lm	12	90.00	90.00
10" 12"	lm	68	70.00	75.00
4" 12"	lm	1	15.00	50.00
Gate valve, 12" f	ea	4	600.00	450.00
Check valve, 12" f	ea	1	600.00	450.00
Gate valve, 10" f	ea	5	500.00	550.00
Alt. valve, 10" f	ea	1	500.00	375.00
Flap valve, 10" f	ea	1	500.00	200.00
Gate valve, 4" f	ea	1	75.00	60.00
Flap valve, 4" f	ea	1	75.00	60.00
Corporation stop, ½" f	ea	4	2.00	1.00
Reducer, 24" x 14" f	ea	1	300.00	400.00
14" x 10" f	ea	1	250.00	300.00
Elbow, 12", 90° f	ea	4	250.00	100.00
10", 90° f	ea	8	200.00	80.00
45° f	ea	2	200.00	80.00
Tee, 12 x 12, 12"	ea	1	300.00	150.00
12 x 12 x 4"	ea	1	300.00	150.00
12 x 12 x 10"	ea	1	300.00	150.00
10 x 10 x 10"	ea	1	250.00	150.00
Elbow 4", 90°	ea	1	10.00	10.00
Flange, 24"	ea	1	350.00	150.00
Blind flange, 10"	ea	1	100.00	75.00
Dresser coupling, 12"	ea	1	300.00	300.00
10"	ea	1	250.00	300.00
Wall sleeve, 12"	ea	3	50.00	75.00
10"	ea	7	40.00	75.00
Pipe anchors	ea	2	50.00	25.00
Asbestos pipe, 10"	lm	180	20.00	13.00
4"	lm	180	12.00	4.00
Valve box & cover	ea	1	100.00	50.00
	ea	1	20.00	50.00
Aluminum grating	sm	21	60.00	40.00
Aluminum, 51-4.23	kg	192	7.00	10.00
angle, 2 x 2 x 1/4"	kg	25	7.00	10.00
post, 3" dia.	kg	16	7.00	10.00
Steel plates, 3/8"	kg	175	3.00	3.00
Aluminum hand rails	kg	20	7.00	10.00
Stair treads	ea	8	15.00	10.00
Chain link fence	lm	210	20.00	10.00
Two-way door	ea	1	300.00	600.00

Bids: 10-13-59 Items	Unit	Quantity	Unit Prices 1C	 2
Concrete, insulation	cm	100	LL 75.00	LL 75.00
sand	cm	110	100.00	80.00
Rubber water stop	lm	20	5.00	10.00
Secomastic	liter	760	5.00	0.30
Manhole frame & cover	ea	10	60.00	50.00
Ladder in reservoir	ea	4	200.00	100.00
valve chamber	ea	2	300.00	100.00
Overflow supports	ea	6	50.00	30.00
Air vents & screen	ea	4	100.00	100.00
Steel door & frame	ea	1	100.00	150.00

f Furnish

Borrow Sources Provided for Yellowstone Road Job

Government-provided pits and quarries will supply borrow excavation, and materials for aggregate base, concrete, and stone barrier for this 3.695 miles of new road construction on the West Entrance–Madison Junction Route–to Yellowstone National Park in Wyoming and Montana.

The award at $229,152 to Robert V. Burggraf Co., Idaho Falls, Idaho, by the Bureau of Public Roads, Department of Commerce, Denver, was 5% under the engineer's estimate. C. W. Hunt, Jackson, Wyo., is the engineer.

The new construction generally follows the existing road. Grading, 34 ft wide, consists principally of borrow. Width of the bituminous stabilized base is 30 ft. Work includes minor drainage structures, stone barrier, turf shoulder, and related work.

Access to the park must be maintained during the tourist season.

The five bids on this project went like this:

1C	Robt. V. Burggraf Co., Idaho Falls, Idaho	$229,152
2	McLaughlin, Inc., Great Falls, Mont	239,368
5	Inland Constr. Co., Inc., Wichita, Kans	290,108
EE	C. W. Hunt, Jackson, Wyo	242,476

Bids: 10-20-59 Items	Unit	Quantity	Unit Prices 1C	 2
Contingent for misc force account	ls	job	$1,000	$1,000
Clear & grub	ac	12	750.00	500.00
Exc, uncl	cy	5,000	0.40	0.60
borrow, case 1	cy	101,000	0.40	0.45
structural	cy	400	4.00	4.00
Overhaul	sta yd	10,000	0.02	0.03
of borrow, case 1	yd mi	41,000	0.30	0.24
Water	unit	1,700	1.50	2.00
provide & maintain plants	ls	job	1,500	1,000
Rolling	hr	600	12.00	12.00
Obslt old rdwys, force acct.	ls	job	1,000	1,000
Cr aggr base crse, grading E	t	24,100	1.50	1.73
Bit base, process	sy	86,000	0.15	0.10
Asph, grade MC-0, 1 or 3	gal	103,000	0.20	0.22
emuls, grade SS-1	gal	9,000	0.20	0.22
Concrete, class A	cy	7	100.00	120.00
Struct stl, furn, fab & erect	lb	610	0.20	0.50
Galv corr met pipe, 12"	lf	64	4.50	7.00
24"	lf	180	10.00	10.00
Corr met pipe arch, 29x18"	lf	1,312	11.00	11.00
Metal end sections for 24" pipe culverts	ea	4	100.00	45.00
29x18" pipe arch culverts	ea	51	100.00	40.00
Guideposts, type 1	ea	10	15.00	10.00
Topsoil, furnish & place	cy	6,000	2.50	2.00
Seeding	unit	400	8.00	4.00
Stone barrier	lf	13,700	2.00	3.00
Turf shoulders	unit	280	37.00	35.00

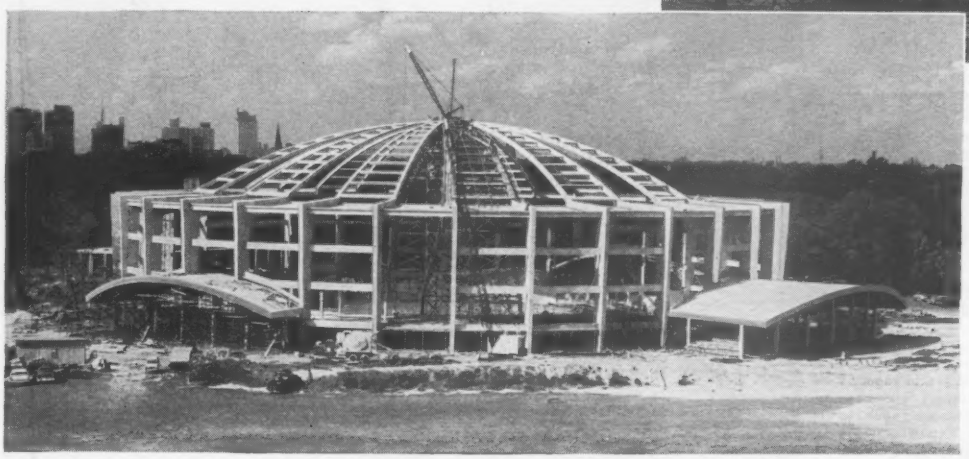
Completion schedule: 150 Cal days
Liquidated damages: :100/day

CONCRETE FRAME FOR NEW JACKSONVILLE COLISEUM

Lehigh Early Strength Cement Used in Unique Roof Structure

• Rising next to the famed Gator Bowl in Jacksonville, Florida, is a reinforced concrete frame providing a support free area 302′ in diameter for the new 12,000 seat Sports Coliseum. Lehigh Early Strength Cement and Lehigh Portland Cement are being used throughout.

A concrete ring 25′ in diameter was poured first atop the center support of this huge two-pronged form. Then the circular roof ribs were poured in pairs in prong forms (only one visible), tying the center ring and outer roof together. After each pour, prongs were lowered 3′ hydraulically and rotated to next position.



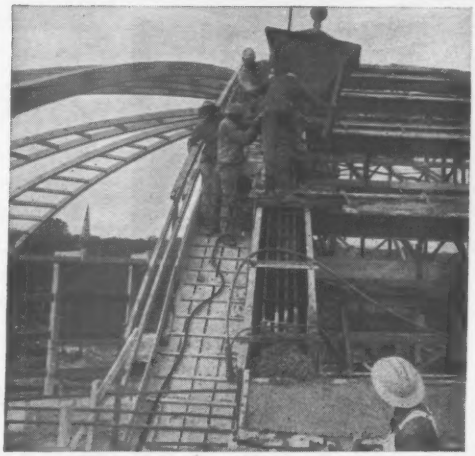
Clear span at base of structure is 302′. Height to center roof ring is 95′. Height to perimeter roof is 65′. Circular roof rib radius is 250′. Two of three entrances take shape in foreground.

Use of Lehigh Early Strength Cement in the perimeter roof made it possible for Daniel Construction Company to use fewer sets of forms while meeting a fast construction schedule. In the circular roof ribs, this cement provided the high early strength concrete necessary for most efficient use of the huge two-pronged form (see pictures).

This is another example of why we say, "Somewhere on nearly every job, Lehigh Early Strength Cement can save time and money." Lehigh Portland Cement Company, Allentown, Pa.

LEHIGH CEMENTS

Owner: City of Jacksonville, Florida • *Architect:* A. Eugene Cellar and George Ryad Fisher, Jacksonville, Fla. • *Structural Engineer:* Gomer E. Kraus, Jacksonville, Fla. • *Contractor:* Daniel Construction Company of Florida, Jacksonville, Fla. • *Ready Mix Concrete:* Southern Materials Company of Florida, Jacksonville, Fla.



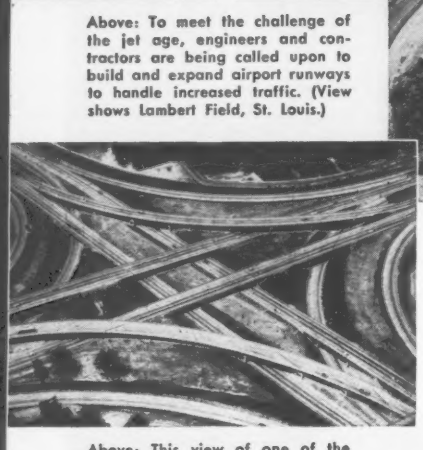
Placing concrete for roof ribs high above coliseum floor.

SYMONS® CONE CRUSHERS

FIRST CHOICE for big volume–low cost production of quality Crushed Sand and Aggregate

Right: This dramatic view of Shasta Dam in California demonstrates the progress made by construction engineers in conserving water supply, preventing flood destruction and providing water needed to make arid land useful again.

Above: To meet the challenge of the jet age, engineers and contractors are being called upon to build and expand airport runways to handle increased traffic. (View shows Lambert Field, St. Louis.)



Above: This view of one of the interchanges on the high speed Detroit expressway is a striking example of the contribution the construction industry is making to the tremendous highway program.

In aggregate and sand production . . . *as in all of the great ore and industrial mineral operations the world over* . . . there has been no record to equal the performance of Symons Cone Crushers that have so consistently and efficiently produced great quantities of finely crushed product at low cost.

Whether you are a contractor, operator, construction engineer, designer or manufacturer, it will pay you to specify and use Symons Cone Crushers for primary, secondary, or finer reductions, in capacities to over 900 tons per hour. Write for literature.

NORDBERG MFG. CO., Milwaukee 1, Wisconsin

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NORDBERG

SYMONS . . . a registered Nordberg trademark known throughout the world

ATLANTA • CLEVELAND • DALLAS • DULUTH • HOUSTON • KANSAS CITY • MINNEAPOLIS • NEW ORLEANS • NEW YORK • ST. LOUIS

Materials Prices

Monthly Market Quotations by ENR Field Reporters

LUMBER, TIMBER, PLYWOOD PER M FT.B.M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)
All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. · Lengths up to 20 ft. (Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	$92.00	$95.00	$90.00	$95.00	$95.00	$100.00	$130.00	.....	.....
Baltimore	98.00	98.00	102.50	102.50	108.00	108.00	125.00	.....	.....
	180.00g	*184.00g*	*185.00g*	*188.50g*	*128.50g*	*128.50g*	*150.00g*	*$180.00*	*$170.00*
Birmingham	83.00	85.00	82.00	84.00	89.00	95.00	111.00	.....	.....
	80.00	*80.00*	*83.00*	*81.00*	*81.00*	*98.00*	*88.00*	*85.00*	*88.00*
Boston	107.00f	107.00f	112.00f	112.00f	112.00f	126.00a	.....	.....	.....
	111.00	*110.00*	*122.00*	*122.00*	*124.00*	*128.00*	*153.00*	*155.00*	*171.00*
Chicago	118.00	121.00	115.00	129.00	137.00	138.00	133.00	.....	.....
	124.00	*124.00*	*137.00*	*135.00*	*136.00*	*136.00*	*144.00*	*144.00*	*144.00*
Cincinnati	102.50	103.75	96.50	98.00	104.75	112.75	121.00	.....	.....
	110.00	*115.00*	*110.00*	*115.00*	*115.75*	*129.50*	*145.25*	*145.25*	*145.25*
Cleveland	100.00	102.00	102.00	100.00	104.00	110.00	.....	.....	.....
	.....	.....	*115.00*	*118.00*	*118.00*	*116.00*	*140.00*	*140.00*	*140.00*
Dallas	78.00k	85.00k	80.00k	80.00k	79.00k	79.00k	125.00	.....	.....
Denver	*Not in stock*		*119.50*	*120.50*	*119.50*	*122.00*	*140.00*	*162.50*	*170.00*
Detroit	138.00	140.50	138.00	136.00	143.50	143.50	.....	.....	.....
	139.25	*139.25*	*150.25*	*148.50*	*157.00*	*162.00*	*201.00*	*218.00*	*218.00*
Kansas City	120.00	120.00	130.00	132.50	135.00	150.00	.....	.....	.....
	120.00	*120.00*	*130.00*	*132.50*	*135.00*	*140.00*	*165.00*	*225.00*	*225.00*
Los Angeles	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*198.00*	*145.00*	*145.00*
Minneapolis	*145.00*	*145.00*	*145.00*	*145.00*	*145.00*	*145.00*	*185.00*	*185.00*	*185.00*
Montreal	84.00a	90.00a	84.00a	84.00a	99.00a	125.00a	.....	.....	.....
	160.00	*160.00*	*160.00*	*160.00*	*160.00*	*160.00*	*170.00*	*170.00*	*170.00*
New Orleans	89.00	89.00	98.00	95.00	95.00	98.00	126.00	.....	.....
	113.50	*113.50*	*115.50*	*115.50*	*115.50*	*116.50*	*122.00*	*125.50*	*125.50*
New York	116.00	118.00	128.00	128.00	128.00	130.00	250.00	.....	.....
	.....	.....	*137.00*	*138.00*	*138.00*	*130.00*	*169.00*	*174.00*	*174.00*
Philadelphia	110.00	110.00	110.00	110.00	110.00	110.00	135.00	.....	.....
	.....	.....	*130.00*	*130.00*	*130.00*	*130.00*	*200.00*	*200.00*	.....
Pittsburgh	135.00	135.00	135.00	135.00	140.00	140.00	165.00	.....	.....
	135.00	*115.00*	*145.00m*	*150.00*	*150.00*	*150.00*	*225.00*	*225.00*	*225.00*
St. Louis	119.00	121.00	129.00d	129.00d	129.00e	130.00e	.....	.....	.....
	.....	.....	*138.00*	*138.00e*	*138.00e*	*138.00e*	*194.00e*	*194.00e*	*194.00*
San Francisco	*90.00*	*90.00*	*92.00*	*92.00*	*92.00*	*92.00*	*109.00*	*131.00*	*133.00*
Seattle	*65.00*	*78.00*	*75.00*	*75.00*	*75.00*	*76.00*	*90.00*	*93.00*	*93.00*
Toronto	85.00a	90.00a	93.00a	85.00a	89.00	88.00a	105.00a	.....	.....
	95.00	*99.00*	*118.00*	*120.00*	*120.00*	*125.00*	*135.00*	*153.00*	*153.00*

LONG LEAF Y. P.		FIR PLYWOOD	
Merchantable grade up to 20 ft.		¾" Interior plyscored,	¾" Ply-form
2x12 Rgh	12x12 Rgh	C-D gr.	grade*
$140.00	$160.00	$135.00	$270.00
175.00	190.00	175.00	275.00
.....	.....	.....	.....
115.00	168.00	126.30	205.50
.....	.....	.....	.....
.....	.....	160.00c	285.00c
.....	.....	.....	.....
161.00	161.00	151.00	240.00
.....	.....	.....	.....
138.00	125.00	98.00f	180.00f
.....	.....	.....	.....
.....	.....	124.00a	217.15
.....	.....	.....	.....
133.00	160.00	112.50ac	200.00ac
.....	.....	148.50	240.50
151.50	.....	175.00gc	265.00gc
.....	.....	.....	.....
.....	.....	150.00	215.00
.....	.....	.....	.....
.....	.....	128.00	225.00
.....	.....	200.00	320.00
120.00	120.00	119.25	225.95
.....	.....	.....	.....
160.00	155.00	116.25	215.00
.....	.....	.....	.....
250.00	250.00	123.20a	207.60a
.....	.....	.....	.....
.....	.....	150.00h	280.00h
.....	.....	.....	.....
145.00	185.00	225.00	295.00
.....	.....	.....	.....
.....	.....	174.28achj	272.07ach
.....	.....	.....	.....
.....	.....	96.00h	175.00h
.....	.....	110.00aeg	205.00aeg
90.00a	.....	256.00	305.50
.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL.

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. °a Spruce. °b Federal tax exempt, add 6% mun. & prov. tax. °c 5M lots. °d 8, 10, & 12 ft. lengths. °e 8 to 16 ft. lengths. °f Hemlock °g No. 1 common. °j 8 ft. lengths. °k No. 3 common. °l Add 2% sales tax. °n Less 2% disc. 10 days. °o Less 2% disc. 10th. °p Less 1% disc. 10 days. °q fir: $80.25 in truck lots, fob job or CL, f.o.b. city. °r For f.o.b. city price add $8 for pine, $38 for fir eff. 1/1/58. °s asd trucklots. °t trucklots del. °u Retail LCL yard. °v Retail LCL, del. °w add 6% mun. & Prov. tax. °x add 4% sales tax.

* PLYWOOD (Plyform, oiled and edge sealed): Douglas fir, 4' x 8' panels, 5-ply sanded 2 sides, carload lots, delivered per 1000 sq. ft. surface. Seattle base price, Interior, moisture resistant, ¾", $151.00; ½", $171.00 Exterior, waterproof, ¾", $155.00; ½", $175.00. °a Delivered. °c Truck lots. °d A-C exterior. °e LCL. °f less 1%, 5 days. °g less 2% for cash. °h less 2% disc, 10 days. °j add 2% sales tax.

GLASS, EXPLOSIVES, CHEMICALS,

WINDOW GLASS

Discounts from jobbers list, Feb. 1, 1950a

	Single or Double Strength A quality	Single or Double Strength B quality
Atlanta	78%	80%g
Baltimore	74%d	74%d
Birmingham	82%f	82%f
Boston	72+10%p	72+10%p
Chicago	72%	72%
Cincinnati	74%	74%
Cleveland	74–2–10%	74–2–10%
Dallas	76%	76%
Denver	73.5%	73.5%
Detroit	74–10–10%	74–10–10%
Kansas City	76–10–10%	76–10–10%
Los Angeles	$12.88/17.32h	$10.45/14.13h
Minneapolis	71–10%	71–10%
Montreal	40–10–5%b	40–10–5%b
New Orleans	76%g	76%g
New York	79%l	79%l
Philadelphia	78%	80%
Pittsburgh	72%	72%
St. Louis	72–10–10%mo	72–10–10%mo
San Francisco	60%	73%
Seattle	$8.85/11.55hiq	$6.41/8.67hjp
Toronto	$6.49/9.57h	$5.90/8.70h

Glass: °a Jobbers' list price per box, 14 x 20, as, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. °b sales tax extra. °c 77% for single strength. °d From 6/15/52 list. °e 77% for double strength. °f Single strength; double strength, 83%. °g From 8/1/58 list. °h ss/ds, 40-in. °i 20 boxes min. °j CL quantity. °k eff. 12/58. °l eff. 10/15/58. °m less 2% disc, 10 days. °n less 1% disc, 10 days. °o add 2% sales tax. °p less 1% for cash. °q less 2% for cash

Explosives: Cartridges of 1¼" diameter or over, in standard lengths. °g deliveries in certain areas must be by truck or by truck and boat, requiring extra charge. °h F.o.b. Beloeil (near Montreal), per 100 lb., lots under 2000#, wood cases, forcite, 40%. Forcite 60%, $24.30 in fiber cases: forcite 40%, $24.05; forcite 60%, $25.80.

40% Ammonia Gelatin price ranges in other than urban areas, per lb: (except Seismograph Grades)

	C/L 300,000 lb. lots	10,000 lb. lots	2,000 lb. lots	200 lb. lots
Group 1*	$0.2095	$0.2195	$0.2545	$0.2695
Group 2†	.2170	.2270	.2620	.2770

* All areas except those in Group 2 and N.J. cities of Bayone, Hoboken, Jersey City, No. Bergen, Union City and Weehawken † Florida counties of Manatee, Hardee, Highlands, Okeechobee, St. Lucieand south thereof; Idaho; Maine; Montana; New Mexico counties of Catron, Socorro, Lincoln, De Baca, Roosevelt and south thereof; Texas counties of Bailey, Lamb, Hale, Floyd, Motley, Cottle, Hardeman, Foard, Knox, Haskell, Jones, Taylor, Coleman, McCulloch, San Saba, Burnet, Williamson, Milan, Robertson, Leon, Houston, Angelina, Nacogdoches, Shelby and south thereof.

EXPLOSIVES

Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 500 lb. lots

Atlanta	$0.2495
Baltimore	.2695
Birmingham	.2495
Boston	.2695
Chicago	.2695
Cincinnati	.2495
Cleveland	.2495
Dallas	.2770
Denver	.2695
Detroit	.2695
Kansas City	.2695
Los Angeles	.2695
Minneapolis	.2695
Montreal	23.20h
New Orleans	.2695
New York	.5030g
Philadelphia	.2695
Pittsburgh	.2495
St. Louis	.2695
San Francisco	.2695
Seattle	.2695
Toronto	.2695

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

PILES, TIES

PILES

Prices per linear foot, fir and pine, rough peeled, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine under fifty feet based on freight from mid-South, over fifty feet, on freight from deep South.

Dimensions	Points	Length	By Rail Pine*‖ R	By Rail Fir R
12" at butt	6-in.	30 to 39-ft.	$0.32a	....
12"—2-ft. from butt	6-in.	40 to 44-ft.	.69	....
12"—2-ft. from butt	6-in.	45 to 49-ft.	.73	....
12"—2-ft. from butt	6-in.	50 to 54-ft.	.77	....
12"—2-ft. from butt	6-in.	55 to 59-ft.	.81	....
14"—2-ft. from butt	6-in.	60 to 64-ft.	.87	....
14"—2-ft. from butt	6-in.	65 to 69-ft.	.92	....
14"—2-ft. from butt	6-in.	70 to 74-ft.	1.02	1.07
14"—2-ft. from butt	6-in.	75 to 79-ft.	1.07	1.07
14"—2-ft. from butt	5-in.	80 to 84-ft.	1.17	1.10
14"—2-ft. from butt	5-in.	85 to 89-ft.	1.27	1.15/1.20

* Pine piling over 90 feet available only in limited quantities. ‖ ASTM Class B
• a, trucked in from N. J.

RAILWAY TIES

Prices f.o.b. per tie box carload lots:

		8' x 8" x 8' Untr.	8' x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	....	4.00a	.....	4.50a
New York	S. L. Sap Pine	3.25	4.75	4.00	6.00
	Mixed Oak	3.25	4.75	4.00	6.00
Philadelphia	Mixed Oak	2.38	3.97	2.78	4.57
St. Louis	Mixed Oak	2.65	3.10a	3.10h	3.75ah
San Francisco	Douglas Fir	2.66ef	3.73ef	3.52ef	4.90ea

Tr.—Treated; Untr.—Untreated. aCreosoted. e Empty cell. e Green
f.o.b. cars. g 7 x 9 x 8'6" * Add 75¢/tie freight charge to Birmingham. °h 7" x 9" x 9½"

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.11
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	31.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.65
Soda ash, 58%, in paper bags, per 100 lb. dense	1.90
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	2.05
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	21.20

See following ENR issues for OTHER PRICES:

- Wage Rates, Building Board, Lath, Insulation: Last, Jan. 28; Next, Mar. 3.
- Cement Aggregates, Ready-mixed Concrete, Asphalt: Last, Feb. 4; Next, Mar. 10.
- Iron & Steel Products. Pipe: Last, Feb. 11; Next, Mar. 17.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Jan. 28; Next, Mar. 3.

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲† **Conn., Groton** — BARRACKS — BA 2/23 — Area P. Wks. Office, 3rd Naval Dist., Room 633, 90 Church St., New York, N. Y., H-shaped barracks for enlisted men, U. S. Naval Submarine Base, Crystal Rd. $1,000,000. CD 6/25.

Me., Old Orchard Beach—BA 2/24—Town, Town Hall, sewage treatment plant, appurtenances, $300,000, plans deposit $25; constr. sewers, pumping station and force mains, $300,000, plans deposit $5. Whitman & Howard, Inc., 89 Broad St., Boston, Mass., engr. CD 9/11.

BUILDINGS—BA

Mass., Peabody—SCHOOL—BA 2/26—City, City Hall, elementary school, Bow St., West Peabody. $850,000. Plans deposit $100. John M. Gray Co., 153 Milk St., Boston, archt. CD 3/2.

Mass., Beverly—SCHOOL—BA 3/2—City, School Bldg. Comn., Supt. School's Office-Junior High School, constr. Ryal Side Elementary School, Greenhill, off Woodland Ave. $635,000. Plans deposit $100. Hugh Stebbins & Assoc., 806 Mass. Ave., Cambridge, archts. CD 2/20/57.

▲ **Mass., Norwood**—SCHOOL—BA 3/10—Town, 825 Washington St., high school addn., Nichols St. $1,803,800. Korslund, LeNormand & Quann, Inc., 506 Washington St., archt. CD 1/29.

▲ **Mass., Boston**—MUNICIPAL AUDITORIUM—BA 3/16—Municipal Auditorium Comn., 44 School St., municipal Auditorium at Prudential Center, Boylston and Dalton Sts. $10,000,000. Hoyle, Doran & Berry, 248 Boylston St., archts. CD 1/6, under LB.

▲† **Me., Topsham**—HOUSING—BA On Or About 3/22—Base Procurement Office, at Base Gymnasium, Topsham Air Force Station, Brunswick, 177 Capehart family housing units, Topsham Air Force Station, Inv. No. 17-612-60-2. $2,920,500. Plans deposit $200. CD 1/15.

▲ **Conn., Enfield**—PRISON—BA 3/23—State P. Wks. Comr., 165 Capitol Ave., Hartford, extension Medium Security Prison, Connecticut State Prison, Project BI-DD-35A. $12,500,000. Plans deposit $180. Fred S. Dubin Assocs., 178 S. Whitney, Hartford, consult. engrs. CD 3/16.

BUILDINGS—SLC

Conn., Newton—FACTORY—Plastic Molding Corp., Glen Rd., Sandy Hook, soon lets contract 1 and 2 story, brick, steel factory, Peck's Lane. $900,000. Giffels & Rossetti, 1000 Marquette Bldg., Detroit, Mich., engrs. CD 10/27.

Conn., Stamford — COMMERCIAL — Yale Kewskin, 20 Pierce Place, soon lets contract, commercial bldg. High Ridge Rd. $405,000. Sternbach & Rheaume, 305 Atlantic St., archts.

HEAVY CONSTRUCTION—LB & CA

▲ **MAINE**—State Hy. Comn., Augusta, **Thomas DiCenzo**, Calais, Me., CA $1,151,702, (5 bidders), b. conc. road 8.442 mi. City of Augusta and Town of Sidney, FAP No. I-95-6 (28) 106, Kennebec Co. Bids Feb. 3 CD 1/18.

Cass-Warner Corp., Colchester Rd., Essex Junction, Vt., LB $610,198, est. $600,000, sewage treatment plant imprvs., ST. ALBANS, VT. City, Sewer Dpt., City Hall, St. Albans, Vt. Bids Feb. 1. CD 1/12.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Callan Constr. Corp., 539 Hope St., Bristol, R. I., CA $929,497, hy. and bridge constr. connect Rte. 6 to Horseneck Beach, S. 114 (4) Westport. Bids Dec. 29, awarded Feb. 2 CD 1/5, under LB.

† **Hart Engineering Co.**, P.O. Box 4288, East Providence, R. I., LB $619,916, est. $707,190, imprvs. to dewatering sys., Boston Naval Shipyard, Charlestown, NBy24925-Spec. 24925/59, BOSTON, MASS. Dist. P. Wks. Office, 495 Summer St., Boston, Mass. Bids Feb. 4. CD 12/18.

M. DeMatteo Constr. Co., 200 Hancock St., North Quincy, Mass., LB Alt. 1, $643,387, LB Alt. 2, $591,994, LB Alt. 3, $569,351, est. $700,000, Contr. MPA 1/008 TWA apron paving, General Edward Lawrence Logan Airport, EAST BOSTON, MASS. Commonwealth of Mass., Port Authority, 14 Court Square, Boston, Mass. Bids Feb. 3. CD 1/18.

BUILDINGS—LB & CA

Owner, c/o Estate Realty Co., Salem, N. H., Separate Contracts, $406,000, RESIDENTIAL DEVELOPMENT, incl. 20 houses, Centerville Acres, SALEM, N. H.

J. F. White Contg. Co., P.O. Box 358, Westwood, Mass., LB $632,000, est. $500,000, Contr. 1-U-58-6, COLD STORAGE LABORATORY, University of Massachusetts, AMHERST, MASS. Commonwealth of Mass., Dpt. Education, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids Feb. 5. CD 1/5.

Owner, c/o Leeland Realty Co., 25 Depot Sq., Lexington, Mass., Separate Contracts, Approx. $408,000 (second section), RESIDENTIAL DEVELOPMENT, "Battle Green Estates," 19 houses, LEXINGTON, MASS.

Martin Cerel, 18 East Central St., Natick, Mass., Separate Contracts, Approx. $412,000, RESIDENTIAL DEVELOPMENT, 19 houses, MARLBORO, MASS.

▲ **Tornabene Bros. Co.**, 170 Needham St., Newton Upper Falls, Mass., LB $1,707,000, Base Bid, REGIONAL HIGH SCHOOL, MATTAPOISETT, MASS. Old Rochester Regional School Dist., Mattapoisett, Mass. Bids Feb. 4. CD 1/11.

Owner, c/o A. Clinton Brooks & Co., 904 Washington St., Norwood, Mass., Separate Contracts, Approx. $412,000, RESIDENTIAL DEVELOPMENT, 17 houses, NORWOOD, MASS.

Martin Cerel, 18 East Central St., Natick, Mass., Separate Contracts, Approx. $400,000 (second section), 22 HOUSES, off Rte. 28, STONEHAM, MASS.

▲ **Donatelli Building Co., Inc.**, 118 Cottage Ave., North Providence, R. I., CA $1,659,105, est. $1,588,100, HIGH SCHOOL, Mendon Rd. CUMBERLAND R. I. Town School Bldg. Comn., Cumberland, R. I. Bids Jan. 19. CD 1/25, under LB.

▲ **Frank E. Downes Constr. Co. Inc.**, 200 Stanley St., New Britain, Conn. CA $1,500,000, HIGH SCHOOL, Hilliard St., MANCHESTER, CONN., Archdiocese of Hartford, Chancery Office, 140 Farmington Ave., Hartford, Conn. Bids Jan. 27. CD 10/8.

▲ **H. Leroy Jackson**, Great Plain, Danbury, Conn., Owner Builds, $2,193,000, 129 HOUSES, Stadley Rough Rd., DANBURY, CONN.

▲ **Blitman Constr. Corp.**, 101 Park Ave., New York, N. Y., CA $1,434,902, Bedford Towers APARTMENT, Bedford St., STAMFORD, CONN. Bedford Towers, 29 Broadway, New York, N. Y. Philip Birnbaum, 12 E. 48 St., New York, N. Y., archt. Awarded Feb. 5. CD 1/6.

Pimpinella Constr. Co., 35 Taylor St., Stamford, Conn., LB $400,000, CHURCH and EDUCATION BLDG., Turn-of-River, STAMFORD, CONN., Turn-of-River Presbyterian Church, 49 Turn-of-River Rd., Stamford, Conn. Bids Jan. 18. CD 1/13.

Darth Realty Corp., 300 N. Main St., Freeport, N. Y., Owner Builds, $400,000, 1 story, steel, masonry BOWLING ALLEY, TORRINGTON, CONN., Carl V. Johnson, College Ave., Torrington, Conn., archt.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; Industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England — Middle West
Middle Atlantic — West of Mississippi
South — Far West
PROPOSED WORK
Water Supply — Public Buildings
Sewers, Waste Disposal — Mass Housing
Bridges — Commercial Buildings
Streets & Roads — Industrial Buildings
Earthwork, Waterways — Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† **Md., Andrews Air Force Base**—HEATING PLANT—BA About 3/3—U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C., heating plant, ENG-49-080-60-11-(12). Plans deposit $25. Lee Kendrick & Assoc., 3132 N. 10th St., Arlington, Va., archts. Bids Jan. 12 rejected, LB $697,250. CD 1/18, under LB.

BUILDINGS—BA

N. J., Morris Plains—BOWLING ALLEY—BA 2/23—Clarence W. Paugh, Brookside, bowling alley, Harrison Ave. $400,000. James Centanni, 263 Clinton Ave., Newark, archt. CD 12/11.

▲ **N. Y., Ithaca**—ATOMIC REACTOR TEACHING BLDG.—BA 2/25—Cornell University, Ithaca, atomic reactor teaching bldg. $1,550,000. Vitro Engineering Co., 225 4th Ave., New York, N. Y., archt.-engr. CD 11/12/58.

▲ **N. Y., Yorktown Heights**—SCHOOLS—BA 3/1—Bd. Educ., Central School Dist. No. 2, Towns of Yorktown, New Castle and Cortlandt, Westchester Co., Yorktown Heights, general contract, plumbing, heating and ventilating, electrical, site development for The Corner School and the Yorktown High School. Plans deposit $50 each. Ferrenz & Taylor, 1451 Broadway, New York, Zone 36, archts. CD 6/22.

Pa., Wyalusing—SCHOOL—BA 3/1—Public School Bldg. Auth., 101 S. 25 St., Harrisburg, elementary school for Wyalusing Valley Joint School Bd. at Village of Laceyville. $550,000. Plans deposit $50. L. P. Kooken Co., 233 Carlisle St., New Oxford, Pa., archt. CD 5/2/58.

Pa., Harrisburg—SCHOOL—BA 3/3—Harrisburg School Bldg. Auth., 121 Chestnut St., Melrose Elementary School 20 and Berryhill Sts. $900,000. Plans deposit $25. W. L. Murray, 1600 N. 2 St., archt. CD 11/11.

▲ **N. J., Elizabeth**—APARTMENT—BA 3/15—Dewey Albert & Herman Leichtung, 185 Montague St., Brooklyn, N. Y., 9 story, 105 unit Queen Mary Apartment, North Broad St., $2,000,000; Queen Elizabeth Apartment, Cross St., $2,000,000. M. E. Ungarleider, 66 Court St., Brooklyn, N. Y., archt.

BUILDINGS—SLC

▲ **N. J., Newark**—HOSPITAL—Bd. Trustees, Tri-County Memorial Hospital, 741 Broadway, soon lets contract hospital addn., Broadway and Grafton Ave. $1,000,000. James Centanni, 263 Clifton Ave., archt.

▲ **N. Y., Syracuse**—DORMITORY—Syracuse University University Place, soon lets contract men's dormitory. $3,000,000. King & King, 420 E. Genesee St., archts. Eckerlin & Klepper, 2507 James St., engrs. CD 9/21/56.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—Dpt. P. Wks., State Office Bldg., Albany,
N. Y.—Serafini Constr. Co., Inc., P.O. Box 265, Binghamton, N. Y., CA $778,529, est. $861,000, b. conc. pavt. Type 1A, 4.59 mi. Aurora-Union Springs Pt. 2, SH 1690, Rte. 90 FARC 59-61, Cayuga Co.;
N. Y.—Callanan Road Importing Co., S. Bethlehem, N. Y., CA $1,163,907, est. $1,310,000, b. conc. 2.7 mi., 2 sp. WF beam bridge 105.5 ft., City of Oneida, East-Wester Arterial Hy., Prospect St., Oneida East Chittenango, Oneida Pt. 2, SH 726 & Chittenango-Oneida Pt. 3, Rte. 365 A FAC 59-10 FASH 59-15 FARC 59-104. Proj. US 496 (1), Madison and Oneida Counties. Bids Nov. 19, awarded Jan. 12. CD 11/20, under LB.

Tully & DiNapoli, Inc., 127-50 Northern Blvd., Corona, N. Y., CA $499,805 (B) relocation and replacement contact rails, 14th St.-Canarsie Line, Rockaway Parkway Station to North of Atlantic Avenue Station, BMT Division, Contr. T-137, Brooklyn Boro, BROOKLYN, N. Y. New York Transit Auth., Rm. 1310, 370 Jay St., Brooklyn 1, N. Y. Bids Jan. 8. CD 1/13, under LB.

▲ **Buffalo Electric Co., Inc.**, 75 W. Mohawk St., Buffalo, N. Y., CA Est. $5,000,000, four 30 ft. high oil circuit breakers, SYRACUSE, N. Y. Niagara Mohawk Power Corp., Erie Blvd., Syracuse, N. Y.

▲ **Buffalo Electric Co., Inc.**, 75 W. Mohawk St., Buffalo, N. Y., CA Est. $5,000,000, 345,000 volt and 115 volt outdoor switchyard transformers, oil circuit breakers for Sub-station, UTICA, N. Y. Niagara Mohawk Power Corp., Erie Blvd., Syracuse, N. Y.

▲† **American Dredging Co.**, 12 S. 12 St., Phila., Pa., LB $3,460,160, est. $3,460,160, dredging Delaware River between Roebling and Newbold Island, Burlington Co., ENG-36-109-60-35, NEW JERSEY, U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Bids Feb. 2. CD 1/8.

Tidewater Constr. Co., Box 57, Norfolk, Va., LB $647,133 (15 bidders), Anacosta Freeway Bridge over Oxon Run Bay, steel H-piles, stonefaced abutments and piers, concrete deck aluminum railings, lighting

system. Inv. 6060-H, WASH., D. C. D. C. Govt., Dpt. Highways, 400 Pa. Ave. N.W., Wash., D C. Bids Feb. 3. CD 1/5.

BUILDINGS—LB & CA

▲ **East 69th St. Apts., Inc.,** 530 Third Ave., New York 16, N. Y., Owner Builds, **$1,310,000,** 9 story APARTMENT, 301-7 East 69th St., NEW YORK, N. Y. CD 7/21.

▲ **Gerace & Castagna, Inc.,** 2110 Northern Blvd., Manhasset, N. Y., CA **$4,887,837,** general contract new and altered facilities for Rikers Island PENITENTIARY, Bronx Boro, NEW YORK, N. Y. Dpt. P. Wks., Rm. 2200, Municipal Bldg., New York 7, N. Y. Bids Jan. 13. Grand total $7,820,790. CD 1/18, under LB.
Jarcho Bros., Inc., 38-18 33rd St., Long Island City, N. Y., CA **$1,344,883,** plumbing for Rikers Island Penitentiary (New York, N. Y.).
Dierks Heating Co., 43-32 33rd St., Long Island City, N. Y., CA **$789,070,** heating for Rikers Island Penitentiary (New York, N. Y.).
Plymouth Elec. Constr. Co., Inc., 60 E. 42nd St., New York 17, N. Y., CA **$799,000,** electrical work for Rikers Island Penitentiary (New York, N. Y.).

▲ **New York City Housing Auth.,** 299 Broadway, New York 7, N. Y., rejected bids Dec. 8, (1) fdns. and general contract (2) heating and ventilating (4) plumbing work James Madison Houses, Proj. NY-5033, E. 110th St., Park Ave., E. 109th St. and Madison Ave. and E. 108th St., Park Ave., E. 107th St. and Madison Ave., Manhattan Boro, NEW YORK, N. Y. LB (1) **$5,355,725,** LB (2) **$503,500,** LB (4) **$530,410.** CD 12/10, under LB.

151 Sixteenth St. Corp., 148 E. 27th St., New York 16, N. Y., Owner Builds, **$400,000,** 6 story APARTMENT, 147-53 W. 16th St., NEW YORK, N. Y.

▲ **Isaac Prussin,** 511 5th Ave., New York 7, N. Y., Owner Builds, **$2,000,000,** 20 story APARTMENT, 196 East 75th St., NEW YORK, N. Y. CD 11/4.

Seward Park Housing Corp., 570 Grand St., New York 2, N. Y., Separate Contracts, **$500,000,** SELF SERVICE MARKET and STORES, 165-75 Clinton St. and 398-411 Grand St., NEW YORK, N. Y. CD 10/9.

Seward Park Housing Corp., 570 Grand St., New York 2, N. Y., Separate Contracts, **$500,000,** UNDERGROUND GARAGE and ROOF PARKING, 240 East Broadway and 200 Clinton St., NEW YORK, N. Y. CD 10/9.

▲ **Tobar Constr. Corp.,** 655 Madison Ave., New York 21, N. Y., Owner Builds, **$1,250,000,** APARTMENT, 333-343 East 55th St., NEW YORK, N. Y. CD 10/27.

Altimont Bros., 4929 Bethesda Ave., Bethesda, Md., Lb **$548,415** (6 bidders), rehabilitation Gaithersburg ELEMENTARY SCHOOL, Gaithersburg, ROCKVILLE, MD. Montgomery County Bd. Educ., Rockville, Md. Bids Feb. 4. CD 1/21.

Evergreen Enterprises, Inc., 82 Washington St., E. Orange, N. J., Owner Builds, **$400,000,** OFFICE, Evergreen Place, EAST ORANGE, N. J. Bernard Hacker, 21 Stevens Ave., Cedar Grove, N. J., archt.

Marvin Broder, General Delivery, Spotswood, N. J., Owner Builds, **$400,000,** 20 HOUSES, Main St. and Park Ave., FREEHOLD, N. J. Lester Cohen, 234 Clinton Place, Hackensack, N. J., and Roche & Roche, P.O. Box 397, Clifton, N. J., archts.

▲ **Melehan Constr. Co., Inc.,** Foxhedge Rd., Saddle River, N. J., Owner Builds, **$1,200,000,** 40 HOUSES, Harriot St., HARRINGTON PARK, N. J. Peter Butler, 172 State St., West Englewood, N. J., archt.

Levin-Sagner Homes, 2 Broadlawn Dr., Livingston, N. J., Owner Builds, **$600,000,** 20 HOUSES, Tiffany Dr., LIVINGSTON, N. J. George Ripa, 333 Carteret Terrace, Orange, N. J., archt.

H. O. MacCulloch, Glenside, Pa., Separate Contracts, **$400,000,** RESIDENTIAL DEVELOPMENT, North Hills Ave., ABINGTON, PA.

Hankin Bros., Willow Grove, Pa., Separate Contracts, **$400,000,** MOTEL and RESTAURANT, BENSALEM, PA. Haag & D'Entremont, Jenkintown, Pa., archts.

Edward J. Walsh, Inc., Springfield, Pa., Separate Contracts, **$400,000,** RESIDENTIAL DEVELOPMENT, Westbrook Ave., DREXEL HILL, PA. David Slott, 1416 Bywood Ave., Upper Darby, Pa., archt.

Waldron Constr. Co., Merion, Pa., CA Over **$400,000,** SHOPPING CENTER, MacDade Blvd., FOLSOM, PA. Owner, c/o general contractor. Louis Kasoff, 401 E. Erie Ave., Phila., Pa., archt.

▲ **Bertram W. Rudy,** 8223 Roosevelt Blvd., Phila., Pa., Separate Contracts, **$1,000,000,** 3 story, 80 unit APARTMENT, KING OF PRUSSIA, PA. Kyell Ingebrigtsen, 8223 Roosevelt Blvd., Phila., Pa., archt.

▲ **Barclay White & Co.,** 3337 Market St., Phila., Pa., CA Est. **$4,250,000,** CANDY MFG. PLANT, Roosevelt Blvd. and Grant Ave., PHILA., PA. Stephen F. Whitman & Son, Inc., 415 Race St., Phila., Pa. Boulware & Montgomery, 1728 Spruce St., Phila., Pa., archts.

▲ **Duffy & Patton,** Clifton Heights, Pa., Separate Contracts, **$1,710,000,** RESIDENTIAL DEVELOPMENT (114), Beatty Rd., etc., SPRINGFIELD, PA.

Spring House Constr. Co., 102 Oakland Ave., Moylan, Pa., Separate Contracts, **$400,000,** RESIDENTIAL DEVELOPMENT, Bobbin Mill Rd., etc., WALLINGFORD, PA. Raymond Di Paola, Media, Pa., archt.

W. H. Ward Contractors, Inc., 712 Ritchie Hy., Glen Burnie, Md., CA **$899,992,** Franklin Square ELEMENTARY SCHOOL, Stricker, Saratoga, Calhoun and Lexington Sts., BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. Bids Jan. 27, awarded Feb. 3. CD 2/1, under LB.

H. S. T. White, 1034 York Rd., Towson 4, Md., LB Approx. **$455,000,** est. $450,000, brick, concrete, steel, block LABORATORY SCHOOL, Bowie State Teachers College, BOWIE, MD. State, Dpt. P. Imprvts., 301 W. Preston St., Baltimore 1, Md. Bids Feb. 4. CD 1/25.

▲ **Donley Constr. Co.,** 200 Mt. Vernon Pl., Rockville, Md., Owner Builds, **$4,000,000,** 315 unit garden type APARTMENTS, 16 acre plot west of Rockville Pike at Edmonston Dr., ROCKVILLE, MD. Collins & Krondstadt, 7705 Georgia Ave. N.W., Wash., D. C., archts.

Joseph Nebel Co., 3408 Wisconsin Ave. N.W., Wash., D. C., CA **$944,700,** HOME for RETIRED, 5133 Broad Branch Rd. N.W., WASH., D. C. Home for Presbyterian Retired, 1818 Newton St. N.E., Wash., D. C. Bids Jan. 19, awarded Feb. 3. CD 1/22, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

Ky., Dover—BA 2/25 (tentative)—Western Mason Co. Water Dist., water lines, 2 storage tanks and booster pump stations, Dover, Germantown and Brooksville areas. $315,000. Kennay & Co., 308 South Ashland Ave., Lexington, engrs. CD 12/17.

Ala., Greensboro—BA 3/3—City, City Hall, sanitary sewer imprvs., incl. 75 acre lagoon, lift stations, lines. $400,000. Plans deposit $35. J. E. O'Toole Engineering Co., Inc., 1929 Cahaba Rd., Birmingham, engr. CD 2/23, under LB.

Ga., Decatur—BA 3/8—Bd. Comrs. DaKalb Co., DeKalb Bldg., 2.0 MGD sewage treatment plant, 18,000 lin. ft. 42 in. truck sewer, etc., Contracts 1 and 2, $500,000. Plans deposit $25. Robert & Co., 96 Poplar St. N.W., Atlanta, engrs. CD 8/28/58.

† **West Virginia**—BA 3/8—U. S. Eng., P.O. Box 2127, Huntington, Zone 18, access roads and recreational facilities for Sutton Reservoir Proj., Elk River, Braxton Co., CIVENG-46-022-60-59B, $400,000. Plans deposit $5. CD 2/2.

▲† **Tenn., Memphis**—MAINTENANCE HANGAR, etc.—BA 3/9—U. S. Eng., 306 Federal Office Bldg., Nashville, A/C maintenance hangar, automotive maintenance shop, paint, oxygen and dope storage bldg., airfield pavement, ENG-40-058-60-2B, at Memphis Municipal Airport. $1,500,000. Plans deposit $9.10. CD 2/3.

BUILDINGS—BA

S. C., Charleston—SHOPPING CENTER—BA 2/23—Flintom & Hollings, 126 Church St., John Myers Shopping Center, $500,000. Plans deposit $75. D. C. Liollio, 173 Savannah Highway, archt. CD 5/13.

Ga., Decatur—SCHOOL—BA 3/1—DeKalb Co. Bd. Educ., DeKalb Bldg., Brockett Road Elementary School, Tucker, $400,000. Plans deposit $50. Finch, Alexander, Barnes, Rothschild & Paschal, 70 Fairlie St. N.W., Atlanta, archts. CD 10/9.

Miss., Water Valley—HOSPITAL—BA 3/9—Bd. Supervs. Yalobusha Co., Court House, Coffeeville, 1 story, 17,-260 sq. ft., concrete masonry 30-bed county hospital. $405,000. Brewer, Skewes & Godbold, 150 Delta, Clarksdale, archts. CD 3/12.

▲ **N. C., Greensboro**—HOSPITAL—BA 3/9—Moses Cone Hospital, 1200 N. Elm St., 50 bed, 67,500 sq. ft. hospital addn. $2,500,000. Plans deposit $50. Loewenstein, Atkinson & Assocs., 1001 E. Bessemer Ave., archts. CD 6/18.

Ala., Dothan—NURSING HOME—BA 3/10—Southeast Alabama General Hospital Bd., 40-bed nursing home addn. $500,000. Charles McCauley, Jackson Bldg., Birmingham, archt. CD 8/29/58.

BUILDINGS—SLC

W. Va., Weirton—CHURCH—Catholic Diocese of Wheeling, 1300 Byron St., soon lets contract church for St. Joseph's Parish. $400,000. Joseph Bendot, 111 Forest St., archt. CD 6/19.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—State Dpt. Hys., 1221 E. Broad St., Richmond, Bids opened 2/3,
Va.—**Adams Constr. Co.,** 2725 Roanoke Ave. S.W., Roanoke, Va., LB **$213,767** (3 bidders), reconstr. 2 gaps 2.34 mi. between Saltville and Broadford. Proj. 0091-086-004, Rte. 91, Smyth Co.; LB **$538,918** (5 bidders), 0.9 mi. divided constr. from U.S. 11 to airport, Proj. 0117-080-002, Roanoke Co.;
Va.—**Arlington Asphalt Co.,** 1756 W. Arlington Rd., Arlington, Va., LB **$486,889** (8 bidders), widen, reconstruction 1.8 mi. from 0.05 mi. west of Glebe Rd. Rte. 102 to 0.83 mi. east of Washington Blvd. Proj. 0029-000-006, U.S. Rte. 29-211, Arlington Co.;
Va.—**Richard F. Kline, Inc.,** Frederick, Md., LB **$1,906,371** (11 bidders), concrete paving and 3 bridges 1.55 mi. from 0.83 mi. north of Rte. 236 to 0.26 mi. north of U.S. Rte. 50 bridges, incl. 2 bridges for interchange at U.S. 50 and to take Rte. 709 (Gallows Rd.) over Interstate Rte. Proj. 0413-029-066, C5A, B25, B39, B40, Interstate Rte. 413 (Washington Circumferential Highway) Fairfax Co.;
Va.—**A. B. Burton Co., Inc.,** Wards Rd., Lynchburg, Va., LB **$793,397,** grading and service roads 3.49 mi. incl. 200 ft. U.S. 11 from 0.8 mi. west of Rte. 11-100 to 1.7 mi. west of Pulaski Wythe Line, closing the gap between Projects under construction east of Wytheville, Proj. 0081-077-011 G1-0081-98-008-G2, 009. Interstate Rte. 91, Contract 1, Wythe and Pulaski Counties. CD 1/15.

▲ **VIRGINIA**—Dpt. Highways, 1221 E. Broad St., Richmond, Bids opened 2/3,
Va.—**Thorington Constr. Co.,** 2106 N. Hamilton, Richmond, Va., LB **$930,830** (15 bidders), 5 bridges on project from Potomac River to near Rte. 123, Rte. 738 over Interstate Rte. and Scotts Run, 3-lane bridge Rte. 193 crossed over Interstate twin structures where Interstate crassed Scotts Run 20-lane bridge for service road to cross Interstate and 4-lane structure where George Washington Parkway overpasses Interstate Rte. Proj. 0413-029-007-B54, B56, B58, B59, B75, Contract II Interstate Rte. 143, Washington Circumferential Highway, Fairfax Co.;
Va.—**Sanford Constr. Co., Inc.,** Sanford, N. C., LB **$658,433** (7 bidders), bridge over Long Creek and Beach Canal and 1.02 mi. approach road south from U.S. 60 about 1 mi. east of Lynnhaven Inlet, Rte. 165, Proj. 0615-075, 010-011, Princess Anne Co. CD 1/15.

NORTH CAROLINA—State Hy. Comn., Raleigh,
McMeekin Constr. Co., Cheraw, S. C., CA **$663,082,** bridge over Catawba River and approaches NC 49, at North Carolina, South Carolina State Line, Proj. 8.16517 S-1400(1), Mecklenburg Co., N. C. and York Co., S. C. Bids Feb. 2, awarded Feb. 5. CD 2/5 under LB.

† **Cecil's, Inc.,** P.O. Box 1895, Spartanburg, S. C., LB **$641,195,** dining hall, airmen's dormitory, Seymour Johnson Air Force Base, ENG-31-075-60-9, GOLDSBORO, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Jan. 19. CD 1/6.

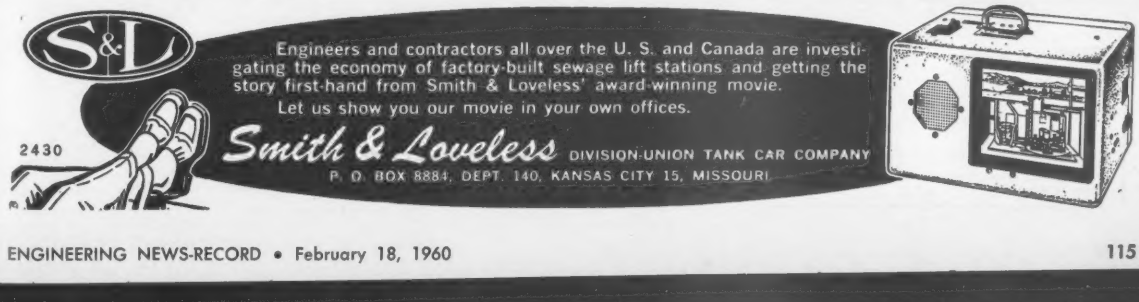
Cone Bros. Contg. Co., P. O. Box 1259, Tampa, Fla., LB **$165,588** (14 bidders), sanitary sewer lines and lift station, LAKE WORTH, FLA. City, City Hall, Lake Worth, Fla. Bids Feb. 1. CD 1/6.

▲ **ALABAMA**—State Hy. Dpt., Montgomery,
Ala.—**Burgreen Constr. Co., Inc.,** Athens, Ala., CA **$844,817,** base and bit. pavement 0.121 mi. U.S. 43 from Franklin Co. Line north toward Tuscumbia, Colbert, Co.;
Ala.—**A. E. Burgess Co., Inc.,** 3700 10 Ave. N., Birmingham, Ala., CA **$901,870,** grading, drainage 4.02 mi. U.S. 78 between Graysville and Walker Co., Jefferson Co. Bids Dec. 18. CD 12/29, under LB.

ALABAMA—State Hy. Dpt., Montgomery, Zone 4,
W. T. Ratliff Co., Inc., Candero Ave., Knoxville, Tenn., CA **$636,286,** base and bit. pave 11.215 mi. U.S. 43 from Satsuma North toward Mount Vernon, Mobile Co. Bids Dec. 18. CD 12/29, under LB.

Louisiana Paving Co., Ruston, La., CA **$986,205,** storm drainage sys. and designated bit. paving imprvs., etc., PLAQUEMINE, LA. Mayor & Bd. of Comn. Iberville Parish, Gravity Drainage Dist. No. 1, Plaquemine, La. Bids Jan. 19. CD 1/4.

▲ **TENNESSEE**—State Hy. Dpt., Nashville,
Tenn.—**Central Pennsylvania Quarry & Stripping Constr. Co.,** Hazelton, Pa., CA **$3,206,186,** grading, drainage, 6 bridges, 3 sets twin concrete deck steel beam structures, 1 set twin concrete deck and precast girder structures and 2 concrete slab type structures, 6.471 mi. section Interstate Rt. N. 40, beginning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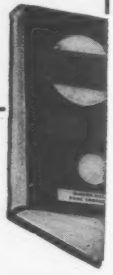

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Cheatham-Davison So., Line and extending toward Nashville to point 2.300 ft. west of Sawyer Brown Rd. Proj. No. I-40-3 (13) 189 Davidson Co.;

Tenn.—**Marion Constr. Co.,** 450 Craighead, Nashville, Tenn. and **Miles Constr. Co.,** Brentood, Tenn., CA **$2,725,378,** grading, drainage, 5 bridges, (2 sets of twin bridges and 3 single structures), paving crossroads with bit material (plant mix) and interstate traffic lanes and ramps with c. conc. 2.283 mi. section of Interstate Rte. No. 40 beginning at point just west of Spence Lane between Murfreesboro Rd. and Leem Hil Pike and extending eastward to point just east of McGavock Pike, Proj. No. I-40-5 (7) 211 Davison Co.;

Tenn.—**Harrison Constr. Co.,** Alcoa, Tenn., CA $619,561 grading, drainage, 2 bridges, (1 single concrete deck and steel plate girder underpass at L. & N. R. R. and 1 set of twin concrete deck girders at St. Rte. 15) and paving with bit. materials approx. 3,000 ft. St. Rte. 15. 0.570 mi. on section Interstate Rte. 24 beginning at point just northwest of L. & N. R. R. and State Rte. 15 and Monteagle and extending to point 728 ft. northwest of Winston Rd. Proj. No. I-24-2 (10) 84, Grundy and Marion Counties;

Tenn.—**T. E. Gillespie Co.,** Lebanon, Tenn., CA **$1,212,-482** grading, drainage and 6 bridges, (5 concrete deck girders and 1 box type), 9.408 mi. sec. Interstate Rte. No. 40 beginning at Sunny Hill Rd., west of State Rte. No. 75, and south of Brownsville and extending to point near State Rte. No. 1, 1.5 mi. West of Haywood and Madion Co. Line, Proj. No. I-40-1 (20) 55, Haywood Co.;

Tenn.—**A. B. Burton Co.,** Lynchburg, Va., CA **$1,529,623** grading, drainage and 4 bridges 3.987 mi. section Interstate Rte. No. 40 beginning near Smithville Rd. south of Cookeville and extending U. S. 70 No. (State Rte. No. 1) approx. 3 mi. southwest of Cookeville Proj. No. I-4-6 (11) 296, Putnam Co.;

Tenn.—**Oman Constr. Co. Inc.,** Ackien Park, Nashville, Tenn., CA **$5,515,136,** grading, drainage and 17 bridges, 12 highway grade separations, 3 railroad grade separation, and 2 box types, paving crossroads only with bit. materials, plant mix and c. conc. 4.97 mi. section Interstate Rte. No. 240, S.E. Circumferential around Memphis, beginning at point approx. 0.4 mi. south of Park Rd. and extending to Bartlett Rd. north of Summer Ave. Proj. No. I-240-1 (17) 13 Shelby Co. Bids Jan. 22. Grand total $14,808,365. CD 1/28, under LB.

▲ **TENNESSEE**—State Hy. Dpt., Nashville,
Marion Constr. Co., 450 Craighead, Nashville, Tenn., CA **$5,604,976,** one set dual bridges (river crossing spans are continuous deck plate girder bridges with stringer and floor beam floor system with concrete decks and approach spans are rolled beam bridge with concrete decks), 0.489 mi. across Cumberland River in Nashville on Interstate Rte. No. 65, beginning just north of Crutcher St. in East Nashville and extending southward across the river to point just north of T.C. railroad near Wharf Ave., Proj. No. I-65-3 (8) 93, Davidson Co. Bids Jan. 22. CD 1/28.

† **Pioneer Constr. Co., Inc.,** Dyersburg, Tenn., CA $287,367, levee and drainage ditch in vicinity of Below Chic and Below Hales Point, Dyer Co., Contract No. DA 40-041, CIVENG-69-84 (IFB CIVENG-40-041-60-39), TENNESSEE, U. S. Eng., P.O. Box 97, Memphis 1, Tenn. Bids Jan. 19, CD 12/15.

▲ **Dravo Corp.,** Suburban Station Bldg., Pittsburgh 19, Pa., CA **$2,000,000,** (5 bidders), 1,400 ft. dock with 13 cells and conveyor to load coal to river barges, PEORIA, TENN. United Electric Coal Co., 307 N. Michigan St., Chicago, Ill. Roberts & Schaefer Co., 1800 Forbes St., Pittsburgh 19, Pa., engr.

BUILDINGS—LB & CA

Riddle, Floyd & Godwin, 118 Old St., Fayetteville, N. C. Day Labor, **$420,000,** 40 RESIDENCES, Scotty Hills Subdivision, FAYETTEVILLE, N. C.

Boren Clay Products Co., Pleasant Garden, N. C., Day Labor, **$150,000,** brick mfg. PLANT, PLEASANT GARDEN, N. C.

▲ **General Constr. Co.,** P.O. Box 1134, Columbia, S. C., CA **$1,074,982,** PHYSICS BLDG., CLEMSON, S. C. Clemson College, Clemson, S. C. Bids Jan. 28, CD 2/2, under LB.

H. C. Jones Constr. Co., 8 Ave. and Myrtle Beach, S. C., CA Est. **$450,000,** MOTOR COURT, FLORENCE, S. C. Keith Jones, 8 Ave., Myrtle Beach, S. C. Edward K. Sheppard & Assocs. 303½ N. Tryon St., Charlotte, N. C., archts.

H. E. Collins Co., 793 E. 9 St., Chattanooga, Tenn., LB **$998,800,** HOSPITAL addn., DALTON, GA. Hamilton Memorial Hospital, Dalton, Ga. Bids Feb. 6, CD 1/29.

Floyd D. Traver & Co., 572 Morosgo Dr., Atlanta, Ga., LB **$477,990,** Sagamore Hills ELEMENTARY SCHOOL, DECATUR, GA. DeKalb Co. Bd. Educ., DeKalb Bldg., Decatur, Ga. Bids Feb. 2. CD 1/4.

Central Constr. Co., P.O. Box 84, Decatur, Ga., LB **$432,829,** SCHOOL addns., imprv., JONESBORO, GA. Clayton Co. Bd. Educ., McDonough St., Jonesboro, Ga. Bids Feb. 2.

▲ **Cooper Constr. Co.,** P.O. Box 5795, Jacksonville, Fla., CA **$1,596,689,** single students women's dormitory RESIDENCE HALL, University of Florida, GAINESVILLE, FLA. Florida State Bd. Control, Admin. Bldg., University of Florida, Gainesville, Fla. Bids Dec. 22. CD 12/29, under LB.

▲ **G. E. Bass & Co.,** 2715 N. State St., Jackson, Miss., CA **$3,000,000,** 12 story APARTMENT; CA **$3,000,-000,** MOTOR HOTEL, JACKSONVILLE, FLA. Charles W. Crisler & G. E. Bass & Co., c/o contractor.

Clutter Constr. Corp., 377 Westward Dr., Miami Springs, Fla., CA **$696,500,** Mango Elementary SCHOOL, 152 St. and SW 79 Ave., and Miami Heights Elementary School, SW 193 St. and SW 114 Ave., MIAMI, FLA. Dade Co. Bd. P. Instruction, 275 NW 2 St., Admin. Bldg., Miami, Fla. Bids Jan. 20, awarded Feb. 3, CD 1/28.

▲ **Edward M. Fleming Constr. Co.,** 4121 NW 25 St., Miami, Fla., LB **$5,309,900,** Base Bid, (5 bidders), CRIMINAL COURTS BLDG., MIAMI, FLA. Bd. Comrs. Dade Co., 10 Floor, Courthouse, Miami, Fla. Bids Feb. 2, CD 1/8.

▲ **M. R. Harrison Constr. Co.,** 1000 NW 54 St., Miami, Fla., CA **$1,378,000,** DISTRIBUTING HOUSE, NW 183 St. and NW 2 Ave., MIAMI, FLA. Western Electric, c/o Weed-Johnson & Assocs., archts., 550 Brickell Ave., Miami, Fla. CD 1/25, under LB.

▲ **Eastern Shopping Centers, Inc.,** Cross Country Center, 6 L. Mall Walk, Yonkers, N. Y., CA **$1,000,000,** Parkwood Plaza SHOPPING CENTER, West Highway 50, ORLANDO, FLA. Tiedtke Realty Co., Winger Park, Fla. CD 1/25.

E. F. Gunn Constr. Co., Box 345, Port St. Joe, Fla., LB **$499,012,** municipal HOSPITAL addns., alterations, PORT ST. JOE, FLA. City Comn., City Hall, Port St. Joe, Fla. Norman P. Gross, P.O. Box 207, Panama City, Fla., archt.

G. E. Bass, 2715 N. State St., Jackson, Miss., CA **$470,000,** 2 story, masonry and wood, concrete and steel Sun-N-Sands MOTEL, BILOXI, MISS. Dumas Milner Corp., 4359 Northview Dr., Jackson, Miss. Bids Jan. 15, awarded Feb. 2. CD 1/13.

▲ **Clark Constr. Co.,** 1919 Parrish Ave., Owensboro, Ky., LB **$1,997,000,** combination bid, MEN'S DORMITORY, WOMEN'S DORMITORY, MARRIED STUDENTS HOUSING, Eastern State College, RICHMOND, KY. Commonwealth of Ky., Div. Purchases, Frankfort, Ky., Bids Feb. 4, CD 1/14;
Fain & Johnson, Box 872, Lexington, Ky., LB **$690,016,** est. $675,000, 76-unit MARRIED STUDENTS HOUSING, Eastern State College (Richmond, Ky.);
Hargett Constr. Co., 113 Walton Ave., Lexington, Ky., LB **$563,184,** est. $600,000, MEN'S DORMITORY; LB **$771,765,** WOMEN'S DORMITORY, Eastern State College (Richmond, Ky.).

Prichard Constr. Co., Alcoa, Tenn., LB **$871,000,** HOUSING UNITS, Monterey, COOKEVILLE, TENN. Cookeville Housing Auth., Cookeville, Tenn.

Castle Bros. Constr. Co., 1134 Pine Ave., Kinsgport, Tenn., LB **$415,000,** WOMEN'S RESIDENCES HALL, East Tennessee State College, JOHNSON CITY, TENN. State, State Capitol, Nashville, Tenn. Awarded Feb. 3.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **O., Canton**—BA 3/1—City, City Hall, 16 mi. 42 in. water main, filtration plant, pumping bldgs., aeration bldg., reservoir, $5,000,000. Beiswenger, Hoch & Assoc., 1006 Grant Bldg., Akron, engrs. CD 1/10/59.

Ill., Chicago—MAINTENANCE FACILITIES—BA 3/3—Dpt. Purchases, City Hall, Zone 2, No. 80.85-59-112, Contr. RB 15, airport maintenance facilities, Delta Airlines, lessee, Chicago O'Hare International Airport, Park Ridge, $875,000. Plans deposit $100. Naess & Murphy, 224 S. Michigan Ave., Zone 4, engrs. CD 11/4.

▲ **Ill., Chicago**—HANGAR—BA 3/4—Dpt. Purchases, City Hall, Zone 2, No. 80.85-59-108, Contr. RB 11, airport hangar, Eastern Airlines, lessee, Chicago-O'Hare International Airport, Park Ridge, $1,910,000. Plans deposit $100. Naess & Murphy, 224 S. Michigan Ave., Chicago, Zone 4, engrs. CD 11/4.

▲ **O., Toledo**—BULKHEAD, etc.—BA 3/28—Toledo-Lucas County Port Authority, 241 Superior St., 1,250 lin. ft. steel sheet pile bulkhead, dredging, fill and foundation piling for grain terminal, railroad siding Maumee River, near Anthony Wayne Bridge, $4,800,-000. Parks, Brinckerhoff, Quade & Douglas, 165 Broadway, New York 6, N. Y., engrs. CD 9/8.

BUILDINGS—BA

Wis., Glendale—OFFICE and SALES—BA 2/24—Red Star Yeast & Prod. Co., 221 E. Buffalo St., Milwaukee, office and sales bldg. $500,000. Plans deposit $50. Eschweiler & Eschweiler, 720 E. Mason St., Milwaukee, Zone 2, archts. CD 4/3.

O., Waverly—BA 2/25—Bd. Educ., elementary school addn. $425,000. Plans deposit $25. Howard & Thomas McClorey, 3002 Woodburn St., Cincinnati, archts. CD 11/11/58.

Wis., Green Bay—SCHOOL—BA 2/26—Bd. Educ., 2 story, 68x160 ft., and 1 story 96x109 ft. addn. to West High School, $670,000. Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., archts. CD 6/10.

▲ **Ill., Chicago**—SCHOOL—BA 3/7—Bd. Educ., 228 N. LaSalle St., John C. Calhoun School, 2850 W. Jackson Blvd. $1,060,000. Raymond A. Peterson, 4014 W. Dempster, Skokie, archt. CD 8/13.

▲ **Ill., Chicago**—HOUSING—BA 3/15—Chicago Housing Authority, 608 S. Dearborn St., Zone 5, Stage 1, Proj. 2-30 William Green Homes, Ogden and Division Sts. $10,864,000. Pace Assocs., 53 W. Jackson Blvd., Zone 4, archts. CD 8/14/57.

BUILDINGS—SLC

▲ **Wis., Janesville**—PLANT—General Motors, Inc., 1200 Industrial Ave., soon lets contract 154,000 sq. ft. body plant addn., rail facilities, drying ovens, etc. W. Guenther, 28 N. Adams Ave., Detroit, Mich., archt. CD 1/20.

(Continued on page 118)

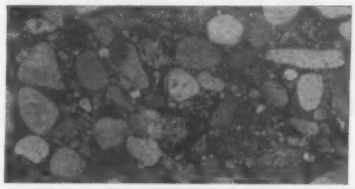
ALPHA

BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

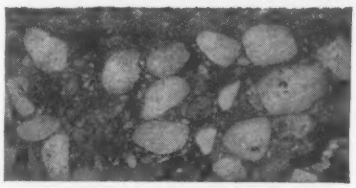
news and notes from the field

Dusting Concrete Floors—Causes and Preventions

When a concrete floor dusts it is because the wearing surface is weak and traffic has caused it to become powdery. The wearing surface of a concrete floor is comparatively thin in cross section, and its construction must be controlled by certain basic principles. When properly constructed this top surface will resist extremely severe wear and abrasion indefinitely, and dusting will not occur.



UNIFORM DISTRIBUTION of coarse aggregate particles in correctly built concrete floor. Note that aggregate extends right up to wearing surface.



WEAK WEARING-SURFACE shows low strength layer of fines. Overtroweling has caused fine particles to rise to the top. Result is excessive shrinkage, cracking and dusting.

What Causes Dusting?

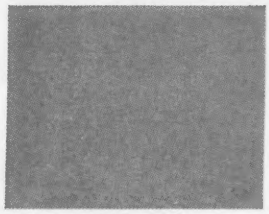
Weak surfaces and dusting generally result from the use of overly wet mixes, excessive troweling and/or inadequate curing which allows rapid evaporation of mixing water at the surface.

To confirm the fact that these practices actually cause dusting, an experienced finisher was called into the laboratory at one of the Alpha plants. He was asked to construct two slabs using the same concrete mix for each, but the slump, finishing and curing of the two slabs were to be drastically different.

More Information

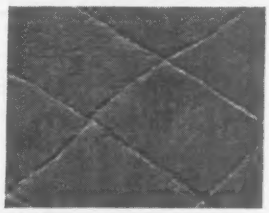
Write for a copy of the Alpha Craftsmanship in Concrete Folder: Steel Trowel Finishing. Consult with your Alpha representative on any unusual problem.

Sample A



Curing and finishing of this slab conformed to the recommendations for proper construction that follow. Sample A had a smooth, hard surface which did not dust.

Sample B



In sample B water was added to increase the slump to 7 inches. It was troweled excessively and not properly cured. Sample B had a soft surface which was easily scratched with a nail as shown in the above illustration.

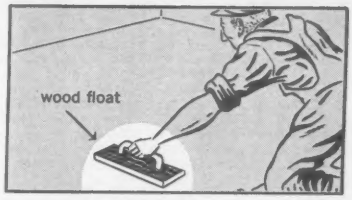
Since the cement and aggregates for each sample were identical, and each slab subjected to the same weather conditions, this Alpha experiment shows conclusively that the wetter mix, overtroweling and inadequate curing definitely produced the extreme difference in results.

How to Build Heavy-Duty Concrete Floors

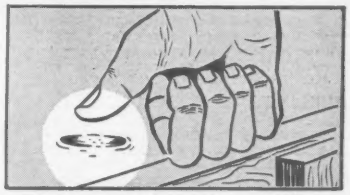
1. Use a relatively dry mix, not over 4-inch slump, on a *damp* subgrade. For machine floating, water should not exceed 4 gal. per sack of cement; for hand floating not more than 5 gal. per sack of cement.

2. Compact by tamping, rolling or vibrating. If vibration is used, it should be uniformly applied and slump should not exceed one inch.

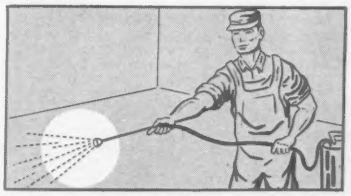
3. Strike off and wood float to grade immediately. If necessary, use steel trowel sparingly to remove float marks. Avoid excessive troweling!



4. Where an extremely smooth surface is desired, an intermediate troweling may be used with great care immediately after the water sheen leaves the surface.



5. Give final steel troweling when finger pressure just dents the surface. The trowel will then produce a ringing sound. Use enough finishers to handle the concrete when ready.



6. Cure with waterproof paper, membrane curing compounds, wet burlap or by ponding with water. Start curing as soon as possible.

Do not omit any of the above steps. Often small imperfections in fresh concrete surfaces do not show after the concrete is cured; so excessive troweling is unnecessary.

These recommendations are intended for use in finishing horizontal surfaces of non air-entrained concrete. When air-entrained concrete is used, slightly different techniques may be required in steel troweling to prevent pulling or tearing the concrete surface.

ALPHA

PORTLAND CEMENT COMPANY

Alpha Building, Easton, Pa.

(Continued from page 116)

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15, Bids opened 2/2,

O.—**Erectors, Inc.**, 33 N. High St., Columbus, O., LB $120,357, est. $144,700 (5 bidders), Type Traffic signs, 45.241 mi. State Rte. 1-0.00, 16.10, I-71-4 (23) 175, Ashland, Medina, Richland and Wayne Counties;

O.—**Chain Link Fence Corp.**, 7800 S. Chicago Ave., Chicago, Ill., LB $166,522, est. $194,500 (4 bidders), Type traffic signs 44.019 mi. State Rte. 1-10.00, 12.89 I-90-1 (26) 31, Village of Lakeville, Village of Madison, Ashtabula and Lake Counties;

O.—**Tri-State Asphalt Corp.**, South Broadway, Martins Ferry, O., LB $346,475, est. $413,200 (5 bidders), Type T-35, 2.411 mi. State Rte. 149-(0.70-2.83) S-1320 (1), Belmont Co.;

O.—**General Outdoor Advertising Co.**, 515 S. Loomis St., Chicago, Ill., LB $111,940, est. $132,300 (4 bidders), Type traffic signs, 57.479 mi. State Rte. 1-0.00, 30.05, I-71-3 (20) 116, City of Columbus, Delaware, Franklin, Morrow and Richland Counties;

O.—**Joe Skinner**, Rte. No. 1, Belmont, O., LB $102,871, est. $162,100 (10 bidders), Type T-35 on B-20 0.511 mi. State Rte. 338-8.55, S-178 (2), Meigs Co.;

O.—**E. K. Bridge Constr. Co.**, 2416 Byrne Rd., Toledo, O., LB $278,995, est. $347,000 (4 bidders), Type T-71 and T-35 1.782 mi. USR 127-3.91, F 614 (6) City of Bryan Williams Co. CD 1/20.

G. E. Mitchell, Marion, Ind., CA $541,768, filtration plant, HUNTINGTON, IND. Bd. P. Wks. & Safety, Huntington, Ind. CD 12/23, under LB.

Divane Bros. Electric Co., 5010 W. Chicago Ave., Chicago, Ill., LB $341,888, est. $300,000 (4 bidders), Contract 59-24, sanitary sewerage, electric work, Calumet Sewage Treatment Plant, CHICAGO, ILL. Metropolitan Sanitary Dist. of Chicago, 100 E. Erie St., Chicago 11, Ill. Bids Feb. 2. CD 1/22.

E. H. Marhoefer Jr., 2424 N. 25th Ave., Franklin Park, Ill., LB $397,798, est. $461,000 (7 bidders), YYC, sanitary sewerage, superstructures Wet Air Oxy. Plant, W-SW Sewage Treatment Plant, Stickney, CHICAGO, ILL. Metropolitan Sanitary Dist. of Chicago, 100 E. Erie St., Chicago, IH. Bids Feb. 4. CD 1/21.

Village of Fox Lake, Village Hall, Fox Lake, Ill., rejected bids Jan. 18, sanitary sewers, FOX LAKE, ILL. LB $905,536. CD 1/27, under LB.

BUILDINGS—LB & CA

Jerome Miller, 234114 Beachwood Rd., Beachwood, O. Own Forces, $468,000, 13 HOMES, Fenway Rd., BEACHWOOD, O. Thomas Caves, 1511 Warrensville Center Rd., Cleveland 21, O., archt.

▲ **Darden Builders, Inc.**, 5437 Bartlett Rd., Bedford, O., Own Forces, $3,000,000, 198 HOMES, Heather Hill development, BEDFORD HEIGHTS, O. CD 4/2/58.

H. F. Campbell Constr. Co., 9301 Michigan Ave., Detroit, Mich., Owner Builds, $203,000, WAREHOUSE, 15919 Industrial Parkway, CLEVELAND, O.

▲ **Cunningham-Limp Co.**, 3087 Wedgewood Bldg., Detroit, Mich., CA Est. $1,000,000, design and construct MFG. PLANT addn., CLEVELAND, O. Glascote Products, Inc., 20900 St. Clair Ave., Cleveland 17, O.

William Passalaqua Builders, Inc., 17300 Miles Ave., Cleveland 28, O., CA Est $650,000, 21,000 sq. ft. SALES AND SERVICE, Lakeside Ave., CLEVELAND, O. Elliott Janeway & Assocs., Empire State Bldg., New York, N. Y. Addressograph-Multigraph Corp., lessee Dalton-Dalton Assocs., The Arcade, Cleveland 14, O., archts.

▲ **Southfield Co.**, Lockbourne and Watkins Rds., Columbus, O., Own Forces, $3,750,000, 250 HOMES, Southfield No. 2 addn., COLUMBUS, O.

▲ **Wingate Constr. Co.**, 34 S. 17th St., Phila., Pa., CA $1,306,000, THERMODYNAMIC LABORATORY, parking, COLUMBUS, O. North American Aviation Corp., 4300 E. 5th Ave., Columbus, O. McConathy Hoffman & Assocs., Inc., 10 Columbus Circle, New York, N. Y., archt.-engr.

▲ **The Austin Co.**, 16112 Euclid Ave., Cleveland 12, O. CA Est. $1,000,000, design and construct PLANT and HEADQUARTERS for key mfg., kev cutting equipment and auto replacement parts, EASTLAKE, O. Curtis Industries Inc., 1130 E. 222 St., Euclid, O.

Amherst Hardware Co., Amherst, O., LB $425,700, heating and ventilating contract ADMIRAL KING HIGH SCHOOL, LORAIN, O. Bd. Educ., 1020 7th St., Lorain, O. Bids Feb. 3. CD 1/13.

Concannon Builders, Inc., 208 S. Washington St., Naperville, Ill., CA $400,000, 2 story, bsmnt., brick, precast concrete Heather Drive SCHOOL, Heather Dr., AURORA, ILL. School Dist. 129, 152 Glenwood Pl., Aurora, Ill. Laz & Mall, 923 N. Lake St., Aurora, Ill., archts. Awarded Jan. 22. CD 11/3.

▲ **S. N. Nielsen Co.**, 3059 Augusta Blvd., Chicago, Ill. CA $9,793,000, Est. $9,337,500, Governor Horner HOUSING extension, Proj. 2-35, Lake St. and Damen Ave., CHICAGO, ILL. Chicago Housing Authority, 608 S. Dearborn St., Chicago, Ill. Bids Jan. 19, awarded Jan. 27. CD 1/21, under LB.

G. H. Sternberg & Co., 1609 Delmar Blvd., Granite City, Ill., LB $599,844 (3 bidders), 1 story, 40,000 sq. ft. brick, concrete flavor ingredient mfg. and canning PLANT, US 67A, GRANITE CITY, ILL. Royal Crown Cola Co., 901 10th St., Columbus, Ga. E. Oren Smith, 1236 Wildwood Ave., Columbus, Ga., archt. Gabriel & Dulgeroff, 1839A Delmar Ave., Granite City, Ill., assoc. archts. Bids Jan. 22. CD 1/27.

▲ **Barmac Constr. Co.**, Chester, Ill., LB $1,320,900, est. $1,000,000, HOSPITAL, ROBINSON, ILL. Crawford County Hospital, Courthouse, Robinson, Ill. Bids Feb. 2. CD 1/15.

Mississippi Valley Structural Steel Co., 1600 N. 25th Ave., Melrose Park, Ill., CA $441,000, 10 story, structural steel HOSPITAL annex, ROCKFORD, ILL. Swedish American Hospital, Charles St., Rockford, Ill. Awarded Feb. 2. CD 4/1.

▲ **Kroening Eng. Co.**, 4500 W. Mitchell St., Milwaukee, Wis., CA $2,965,652, St. Catherine HOSPITAL addn., KENOSHA, WIS. Sisters of St. Dominic, 3556 7th Ave., Kenosha, Wis. Bids Jan. 6. CD 1/12, under LB.

▲ **Hunzinger Constr. Co.**, 4577 N. 124 St., Milwaukee, Wis., LB $1,329,980, (14 bidders), general contract, SCIENCE BLDG., MILWAUKEE, WIS. Bd. Regents, University of Wisconsin, Madison, Wis. Bids Feb. 2, CD 1/19;

J. E. Robertson Co., 1423 Underwood Ave., Milwaukee, Wis., LB $573,800, heating, plumbing, air-conditioning, (Milwaukee, Wis.).

▲ **Seizer-Ornst Co.**, 6222 W. State St., Wauwatosa, Wis., CA Est. $1,500,000, remodeling BANK, MILWAUKEE, WIS. First Wisconsin National Bank, 743 N. Water St., Milwaukee, Wis. Bids Jan. 22. CD 1/19.

Hedrich Constr. Co., Chilton, Wis., LB $670,740, general contract, PHYSICAL EDUCATION BLDG., PLATTEVILLE, WIS., Wisconsin State Colleges Bldg. Corp., Madison, Wis. Bids Jan. 28. CD 12/23.

▲ **Jos. P. Jansen Co.**, 5376 N. Teutonia Ave., Milwaukee, Wis., CA Est. $1,300,000, MOTEL, WAUWATOSA, WIS. Holiday Inn Motel, 2 Craif Ave., Madison, Wis., Rasche, Schroeder & Spransy, 601 W. Capitol Dr., Milwaukee, Wis., archts.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

Ark., Rogers—BA 2/24—City, Bd. Sewer Comrs., City Hall, Sect. 1, inlet facilities, etc. and sewage treatment plant addn.; Sect. 2, 22,478 lin. ft. 10- to 24-in. outfall sewer and 4,890 lin. ft. 8 in. c.i. force main. $465,000. L. M. McGoodwin, Rte. 8, Fayetteville, engr. CD 8/6.

Colo., Pueblo—BA 2/29—City, 319 W. 4 St., City Hall, 2 water storage reservoir. $475,000. Simon F. Elliott, 111 E. 5 St., engr. CD 12/2.

† **Mo., Grandview**—AMMUNITION STORAGE, etc.—BA On Or About 3/3—U. S. Eng., 1800 Federal Office, Kansas City 6, Mo., ammunition storage, ADC type and alert hangar protection, Richards-Gebaur Air Force Base, ENG-23-028-60-51. $500,000. Plans deposit $30. CD 9/9/58.

Minn., Lafayette—BA 3/3—Village, Village Hall, sewage disposal plant and 20,000 lin. ft. sanitary sewer lines. $208,796. Bolton & Menk, St. Peter, engrs. CD 4/23.

† **Iowa**—BA 3/15—U. S. Eng., Clock Tower Bldg., Rock Island, Ill., Muscatine Island Levee Dist. Flood Control Proj., Stage II, Mississippi River, Muscatine and Louisa Counties, along right bank of Mississippi River, CIVENG-11-117-60-13, $600,000. CD 9/30.

▲ **Wyo., Laramie**—UTILITY TUNNEL, etc.—BA 3/4—University of Wyoming, Campus, utility tunnel, boiler sys. expansion, University of Wyoming. $1,500,000. Stanley Eng. Co., Hershey Bldg., Muscatine, Iowa, engr. OD 12/30/58, under Public Buildings.

BUILDINGS—BA

Kan., Stafford—HOSPITAL—BA 2/23—Stafford Hospital Dist. No. 4, 1 story, 17,000 sq. ft. hospital. $400,000. Seitz & Jones, Box 173, Ellsworth, archts. CD 4/2.

Minn., Herman—SCHOOL—BA 2/25—Bd. Educ. Independent School Dist. No. 700, elementary school, Ugstad and Simar Rds. $400,000. A. C. Lucas, Jr., 800 Alworth Bldg., Duluth, archt. Foster, Jacobs & Johnson, Inc., 316 Medical Arts Bldg., Duluth, engr.

Minn., Minneapolis—GYMNASIUM, etc.—BA 3/1—Augsburg College & Theological Seminary, 700 Block and 21st Ave. S., gymnasium-auditorium. $750,000. Lang & Raugland, 802 Wesley Temple Bldg., archts. CD 2/13.

▲ **Tex., Brownsville**—DWELLINGS—BA 3/3—Housing Authority of Brownsville, 24 Elm St., (Tex. 7-6) 150 dwelling units, (streets, curbs, walks, sewers, water, elec., gas, grading and landscaping). $1,500,000. Plans deposit $50. Olin Boese & Associates, 905 T & P Bldg., Fort Worth, archts. CD 6/8.

BUILDINGS—SLC

Tex., San Antonio—CHURCH—First Baptist Church, 202 5th St., soon lets contract church addn. $450,000. Bartlett Cocke, 3501 Broadway Ave., archt. W. E. Simpson Co., 945 Milam Bldg. and Martin E. Staley, Chandler Bldg., engrs. CD 11/12.

HEAVY CONSTRUCTION—LB & CA

E. M. Duesenberg, Inc., Hy. 106 West, Mason City, Iowa, LB $190,748, concrete paving, etc. county roads, SIOUX CITY, IOWA. Woodbury Co., Court House, Sioux City, Iowa. Bids Jan. 11.

▲ **MISSOURI**—State Hy. Comn., Jefferson City, Bids opened 1/29,

Mo.—**S. J. Groves & Sons Co.**, 1104 W. Reynolds St., Springfield, Ill., LB $602,780, (11 bidders), graded earth, constr. culverts, etc. 10.343 mi., Christian Co.; LB $712,580 (11 bidders) graded earth, culverts, 2.486 mi., Greene Co.;

Mo.—**J. A. Tobin Constr. Co.**, 3701 Rainbow Blvd., Kansas City, Kan., LB $974,451, (3 bidders), graded earth, culverts, 2 multi lanes concrete pavt. variable width, sep. by median 0.805 mi.; LB $187,118 (6 bidders), graded earth, culverts 0.085 mi. both in Jackson Co.;

Mo.—**Peter Kiewit Sons Co.**, 1525 S. Glenstone, Springfield, Mo., LB $1,955,612, (6 bidders), graded earth, culverts, 2-24 ft concrete pavt. sep. by med. forming div. highway 10.673 mi., Platte Co.;

Mo.—**Howard Constr. Co.**, 1504 North Osage, Sedalia, Mo., LB $1,434,300, (12 bidders), graded earth, culverts, b. conc. surf. 10.328 mi., Worth Co.;

Mc.—**Trinidad Asphalt Mfg. Co. & Quarry Reality Co.**, 4030 Chauteau Ave., St. Louis 10, Mo., LB $507,640, (7 bidders), b. conc. wid'n., 24 ft. wide resurf. 20.617 mi. Lincoln Co.;

Mo.—**Reno Constr. Co., Inc.**, P. O. Box 61, Overland Park, Kan., LB $547,388, (8 bidders), b. conc. wid'n., 24 ft. wide resurf. 16.018 mi., Benton Co.;

Mo.—**Union Constr. Co.**, 1401 Fairfax Trafficway, Kansas City, Kan., LB $563,218, (9 bidders), b. conc. wid'n., 24 ft. wide resurf. 16.492 mi., Benton Co.;

Mo.—**Fred Weber, Contractor, Inc.**, 7929 Alabama Ave., St. Louis 11, Mo., LB $667,604, (5 bidders), graded earth, culverts, wid'n. and part concrete surf. and part b. conc. surf. 1.786 mi., St. Louis Co. CD 1/6.

▲ **SOUTH DAKOTA**—State Hy. Dpt., Pierre, Bids opened 2/4,

S. D.—**Brownlee Constr. Co.**, Madison, S. D., **C. A. Landeen**, 2117 W. 20 St., Sioux Falls, S. D., and **Bert Hustrulid & Sons, Inc.**, Beresford, S. D., LB $407,503 (9 bidders), grading, subbase, etc. 11.411 mi. S.D. 50 from 1 mi. west of Tyndall west F 012-1 (2) and F 012-2 (1), Charles Mix and Bon Homme Counties;

S. D.—**Floyd E. Knight, Webster, S. D., and Rindahl Constr. Co.**, Lake Preston, S. D., LB $435,497 (13 bidders), grading, subbase, etc. 13.132 mi. S.D. 20 from West Co. Line east, F 042-4(3), Clark Co.;

S. D.—**Johnson Brothers Co.**, 342 S. Harrison St., Pierre, S. D., LB $435,587 (15 bidders), grading, subbase, etc. 9.264 mi. U.S. 14 from Midland to North Co. Line, F 026-3 (1), Haakon Co.;

S. D.—**P. A. Bradbury Constr. Co.**, Wylies Park Rd., Aberdeen, S. D., LB $228,646 (21 bidders), base course and bit. surf. 11.062 mi. S.D. 37 from 3 mi. north of Groton, F-047-7 (3), Brown Co.;

S. D.—**The Haggart Constr. Co.**, Fargo, N. D., LB $182,579 (20 bidders), base course and bit. 10.716 mi. S.D. 44 from S.D. 37 west S-1971 (6) and S-1972 (2), Douglas and Hutchinson Counties;

S. D.—**Myrl Clark**, Yankton, S. D., LB $137,854 (14 bidders), base course and bit. surf. 4.991 mi. S.D. 52 from S.D. 50 to Gavins Point S-9491 (2), Yankton Co.;

S. D.—**H. Estervig**, Huron, S. D., LB $111,654 (3 bidders), furnishing steel bearing piles, F 030-1, Hughes Co. CD 1/12.

▲ **SOUTH DAKOTA**—State Hy. Dpt., Pierre, Bids opened 2/4,

S. D.—**Turner Constr. Co.**, 907 S. Minn St., Sioux Falls, LB $121,766 (5 bidders), structure and approach grading and paving 262 ft. concrete bridge 9.231 mi. Spring Creek in Sioux Falls, C 9976, Minnehaha Co.;

S. D.—**Central Contg. Co.**, W. Blvd. and Denver St., Rapid City, S. D., LB $1,111,515 (8 bidders), structure and approach grading and paving 134 ft. structure, 4 lane grade and paving 3.662 mi. SD 37 in Mitchell North F 047-3 (1), Davison Co.;

S. D.—**Dave Gustafson & Co.**, 502 E. 6 St., Sioux Falls, S. D., LB $99,043 (9 bidders), 6 structures S.D. 50 west of Tyndall, F 012-2 (1), Bon Homme Co. CD 1/12.

NEBRASKA—State Dpt. Rds., State Capitol, Lincoln, **Missouri Valley Constr. Co.**, Grand Island, Neb., CA $629,945, bridge, Proj. No. F-29 (14), Butler and Colfax Counties. Bids Dec. 17, awarded Dec. 31. CD 12/28, under LB.

▲ **W. R. Grimshaw Constr. Co.**, Enterprises Bldg., Tulsa, Okla., LB $4,062,589, est. $4,000,000 (14 bidders), airport terminal facilities, TULSA, OKLA. Tulsa Airport Authority, City Hall, Tulsa, Okla. Bids Feb. 2. CD 12/29.

El Paso Natural Gas Co., El Paso, Tex., Owner Builds, $225,000, compressor station; $400,000, gas-gathering lines, El Paso area, TEXAS. CD 10/9/56.

Southwestern Electric Service Co., c/o Merc. Bank Bldg., Dallas, Tex., Owner Builds, $115,000, enlarged electric sub-station, Rusk; $115,000, enlarged electric sub-station, East Jacksonville; $115,000, enlarged electric sub-station, Arp. TEXAS. Grand total $345,000. CD 2/7/58.

Champlin Oil & Refining Co., 1052 N. 5th St., Abilene, Tex., Owner Builds, $225,000, earthwork for unitization of oil recovery, in Taylor Co. field, ABILENE, TEX. CD 1/28.

Socony Mobiloil Co., Inc., c/o N. Esperson Bldg., Houston, Tex., Owner Builds, $210,000, earthwork for unitization waterflooding program, at Pierce Junction, HOUSTON, TEX. CD 1/28.

Texaco, Inc., Kountze, Tex., Owner Builds, $175,000, expansion earthen underground cavity, for butane storage, KOUNTZE, TEX. CD 1/25.

† **Morgen & Oswood Constr. Co.**, P.O. Box 226, Glasgow, Mont., LB $720,672, est. $689,354 (11 bidders), water treatment plant, Glasgow Air Force Base, Inv. 60-17, GLASGOW, MONT. U.S. Eng., City-County Airport, Walla Walla, Wash. Bids Feb. 3. CD 1/27.

COLORADO—State Hy. Dpt., 4201 East Arkansas, Denver,

Blanchard Constr. Co., P. O. Box 268, Derby, Colo., CA $378,804, est. $424,000, (14 bidders), grading, stabilization, structures and plant mixed asph. surf. 5.921 mi. Colorado Proj. No. F 025-2 (4), Alamosa Co. Bids Feb. 2. CD 1/22.

(Continued on page 120)

YOU'LL NEVER BURN OUT AN AIR TOOL

with the new Le Roi LO-380 line oiler...

EMPTY OILER SHUTS OFF AIR!

Here's how the LO-380 Saves Tools—Cuts Repairs!

(1) Inlet reed valve meters air into the oil-resistant bellows

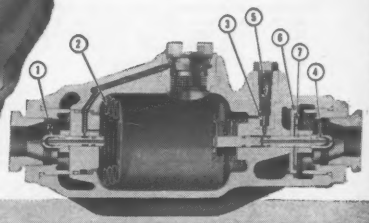
(2) which creates pressure that forces regulated amount of oil through porting connected to the needle valve (3) and the porting connecting it to the outlet reed valve

(4) through which oil is injected into the air stream.

(5) Set screw permits easy external adjustment of oil feed during operation.

(6) Positive pressure differential valve assures correct oil feed for all air flows — eliminates oil waste.

(7) Shut-off valve automatically stops air when oiler is empty. As oil supply goes down, bellows (2) expand and contact the shut-off plunger, depressing it until the valve reaches the automatic shut-off position.



That's right! *You'll never burn out an air tool with the new Le Roi LO-380 on the job!* When the oiler runs dry, it automatically shuts off the air! The "no oil — no air" design prevents unnecessary wear on critical parts — cuts repair bills — extends tool life!

The new line oiler assures positive lubrication for air tools — delivers a steady mist of oil at 10 to 150 psi — and keeps it flowing until you shut the air off, or until the empty oiler shuts it off automatically. Metered oil flow provides exceptional economy, prevents oil splurges. As a matter of fact, the LO-380 will pay for itself in a short time through oil savings alone!

Oiler permits easy external adjustment of oil feed — provides full one-pint capacity. Lightweight — only 9 lbs. — it's easy to use, easy to move—operates in any position. Oiler can be refilled under pressure while air tool is in operation.

Contact your nearest Le Roi distributor for details — or write to Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wisconsin.

LE ROI NEWMATIC® AIR TOOLS

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS

AT-906

(Continued from page 118)

COLORADO—State Hy. Dpt., 4201 East Arkansas, Denver,
Colorado Constructors, Inc., 725 W. 39 Ave., Denver, Colo., CA $266,732, est. $256,000 (10 bidders), structures, grading and asph. surf. 0.588 mi. Colorado Proj. No. I-25-3 (12) 217, Adams Co. Bids Feb. 4. CD 1/26.

COLORADO—State Hy. Dpt., 4201 East Arkansas, Denver,
Harrison Constr. Co., 1566 South Bannock, Denver, Colo., CA $453,284, est. $508,000 (12 bidders), grading, structures, plant mixed asph. surf. 4.642 mi. Colorado Proj. No. F 022-2 (18), La Plata Co. Bids Feb. 4. CD 1/26.

BUILDINGS—LB & CA

Carl A. Nelson & Co., 1815 Des Moines Ave., Burlington, Iowa, CA Est. $650,000, RECREATIONAL BLDG., incl. 24 bowling lanes, automatic pinsetters, restaurant, cocktail lounge, snack bar, etc., at Roosevelt and Kirkwood Sts., BURLINGTON, IOWA. B E K Assocs., Inc., c/o Richman Bry, Park Plaza Hotel, St. Louis 8, Mo. Bids Jan. 26. CD 1/19.

▲ **S. Patti Constr. Co.**, 1340 Admiral Blvd., Kansas City, Mo., CA $1,369,000, est. $1,700,000, (11 bidders), Kaw POWER STATION Extension No. 2, Contr. No. K-85, KANSAS CITY, KAN. City, Bd. P. Utility, City Hall, Kansas City, Kan. Burns & McDonell Engineering Co., Box 173, Kansas City 41, Mo., engr. Bids Jan. 27, awarded Jan. 28. CD 7/1/54.

▲ **Dondlinger & Sons, Inc.**, 1206 E. Lincoln St., Wichita, Kan., CA Total est. $1,500,000, superstructures for 8 story, 136x140 ft Colorado-Derby OFFICE, 1st and Water Sts., WICHITA, KAN. Colorado-Derby Bldg. Co., c/o J. W. Meeham, pres., Derby Refining Co., 420 W. Douglas, Wichita, Kan. W. I. Fisher, 301 S. Main St., Wichita, Kan., archt. CD 9/23.

▲ **Harmon Constr. Co.**, 300 S. Indiana Ave., Oklahoma City, Okla., CA $2,600,000, 15 story APARTMENT, 6001 N. Brookline Ave., OKLAHOMA CITY, OKLA. W. C. Mason Jr., Gazette Bldg., Little Rock, Ark. Bailey, Bozallis, Dickson & Roloff, Liberty Bank Bldg., Oklahoma City, Okla., archts. Awarded Feb. 1.

Cooper Homes, Inc., Builders, Washington St., Amarillo, Tex., Owner Builds, $432,000; 48 DWELLINGS, AMARILLO, TEX. CD 1/28.

Hallmark Homes, 3689 Del Monte St., Houston, Tex., Owner Builds, $418,500, 34 DWELLINGS, $409,150, 31 DWELLINGS, Craigmont addn. expansion, BAYTOWN, TEX. CD 1/20.

Malcolm McCulloch-Roy Davidson, Builders, 11000 Northwest Hy., Dallas, Tex., Owner Builds, $418,475, 26 DWELLINGS; $440,000, 20 DWELLINGS, Lakeland Hills Subdivision, DALLAS, TEX. CD 1/28.

Automatic Sprinkler Corp., 1702 Hinton St., Dallas, Tex., LB $387,400, est. $300,000, (3 bidders), fire sprinkler sys. for B-58 ENGINE RUN STATIONS, FORT WORTH, TEX. Convair, Division of General Dynamics, Grants Lane, Fort Worth, Tex. F. C. Clayton, Grants Lane, Fort Worth, plant engr. Bids Jan. 29. CD 1/25.

Progressive Development, Inc., 3500 Denton Hy., Fort Worth, Tex., Owner Builds, $500,000, 1 story, 52,200 sq. ft. North Hills Village SHOPPING CENTER, masonry, on Denton Hy., FORT WORTH, TEX. Frank McLure & Associates, 316 Bailey St., Fort Worth, Tex., archts.

M. C. Cole & Co., 2701 S. 1, Garland, Tex., Owner Builds, $462,500, 37 DWELLINGS, GARLAND, TEX. CD 1/27.

Lawrence and Eugene O'Donnell, Builders, 730 Little York Rd., Houston, Tex., Separate Contracts, $438,100, 41 DWELLINGS; $424,150, 38 DWELLINGS, in Oakwilde Addn., HOUSTON, TEX. CD 1/20.

▲ **Marshall Constr. Co.**, P. O. Box 7538, Houston, Tex., CA $1,256,000, 3 ELEMENTARY SCHOOLS, Sec. 4 Westbury, Chocolate Bayou Estates, Bellfort and Sec. 7 of Meyerland-Turner School, HOUSTON, TEX. Houston Ind. School Dist., 1300 Capitol Ave., Houston, Tex. Bids Jan. 21. CD 1/29, under LB.

M. P. Moore, Contractor, 7127 Edgemoore St., Houston, Tex., Owner Builds, $441,000, 27 DWELLINGS; $422,125, 25 DWELLINGS, in 5th Sec. of "Sharpstown", HOUSTON, TEX. CD 1/27.

Pace Setter Homes, Inc., 5603 Trafalgar St., Houston, Tex., Owner Builds, $417,200, 24 DWELLINGS, HOUSTON, TEX. CD 1/20.

Lester W. Prokop Building Co., Inc., 5616 Heatherbrook St., Houston, Tex., Owner Builds, $438,500, 29 DWELLINGS; $428,875, 25 DWELLINGS, in Windsor Village, HOUSTON, TEX. CD 1/20.

Sam Wood & Associates, c/o Wood Insurance Agency, Marshall, Tex., Owner Builds, $410,000, BOWLING CENTER, MARSHALL, TEX. CD 8/21.

▲ **Phillips Chemical Co.**, subsidiary of Phillips Petroleum Co., Bartlesville, Okla., Owner Builds, approx. $8,000,000, Carbon Black PLANT; $75,000, water sys.; $90,000, outside lighting sys.; ORANGE, TEX. Grand total approx. $8,165,000. CD 11/17.

Fred N. Peek, Homebuilder, 6033 Berkshire Lane, Dallas, Tex., Owner Builds, $443,500, 28 DWELLINGS, $432,125, 26 DWELLINGS, RICHARDSON, TEX. CD 1/25.

Pettigrew, Worley & Co., 230 W. Avery St., Owner Builds, $432,225, 32 DWELLINGS; $418,400, 28 DWELLINGS, Tex-Ann Homes, trademark, RICHARDSON, TEX. CD 1/21.

Aldwych Constr. Co., c/o owner, CA $435,000, addnl. APARTMENT units, SAN ANTONIO, TEX. Stardust Apartments, c/o Max Kaplan, 255 Rampart St., Apt. No. 1, San Antonio, Tex. CD 1/29.

Guy Chipman Co., 535 Busby St., San Antonio, Tex., Owner Builds, $422,100, 22 DWELLINGS, SAN ANTONIO, TEX. CD 1/21.

Homecraft Builders, 105 Caladium St., San Antonio, Tex., Owner Builds, $428,225, 13 DWELLINGS, in Castle Hills and Park Estates, SAN ANTONIO, TEX. CD 1/15.

Kinder Homes, c/o G. E. Kinder, Builder, 747 W. Sunset Rd., San Antonio, Tex., Owner Builds, $400,000, 40 DWELLINGS, SAN ANTONIO, TEX. CD 1/21.

W. E. Nunn, 512 S. Center St., Pasadena, Tex., Owner Builds, $425,000, 76-unit APARTMENT, SAN ANTONIO, TEX. Harold Karmerling, Lufkin, Tex., archt. CD 2/9.

Shady Oaks Co., c/o Chas. N. Wideman, 2035 W. Summit Ave., San Antonio, Tex., Separate Contracts, $411,000, 23 DWELLINGS, in NE School Dist. area, SAN ANTONIO, TEX. CD 1/21.

O. B. & Bruce T. Shepherd, 2938 Chisolm Trail, San Antonio, Tex., Owner Builds, $409,600, 17 brick veneer DWELLINGS, SAN ANTONIO, TEX. CD 1/29.

Lowe Constr. Co., 2325 9th Ave. N., Billings, Mont., CA $648,000, (8 bidders), general contract, GYMNASIUM AND PHYSICAL EDUCATION BLDG., Eastern Montana College, BILLINGS, MONT. Eastern Montana College, Billings, Mont. Bids Feb. 2, awarded Feb. 2. CD 12/23.

▲ **Craftsmen Constr. Co., Inc.**, Laramie, Wyo., CA $1,281,243, est. $1,325,000, (11 bidders), womens DORMITORY at Wyoming University, LARAMIE, WYO. University of Wyoming, Laramie, Wyo. Bids Feb. 5. CD 1/8.

† **Lockwood & Katz, Genl. Contr.**, P. O. Box 4307, Santa Fe, N. M., LB $880,504, Base Proposal, est. $882,126, (14 bidders), Shiprock HOSPITAL QUARTERS, Proj. ABU-PH-44, SHIPROCK, N. M. Bureau Indian Affairs, Dpt. Interior, P. O. Box 1777, Albuquerque, N. M. Bids Feb. 2.

FAR WEST

HEAVY CONSTRUCTION—BA

Calif., San Leandro—BA 3/2—City, City Hall, sewage treatment plant, foot of Davis St. (domestic and industrial) waste treating, primary and secondary mixing tank, filter, etc. $300,000. Plans deposit $25.

▲† **Alaska**—COMPOSITE BLDGS., etc.—BA 3/3—U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash., composite bldgs., radio relay bldgs., covered walkways, foundations, outside utilities, roads and towers at Lena and Hoonah Point for Rearward Communications Facilities, Inv. 60-28. Over $3,000,000. Plans deposit $5.

▲ **Calif., Los Angeles**—BA 3/4—Los Angeles County Flood Control Dist., 2250 Alcazar St., Proj. No. 590, Whittier Storm Drain in Whittier. $1,000,000. CD 11/10/58.

▲† **Calif., Lemoore**—OPERATIONAL, PERSONNEL and ADMINISTRATIVE FACILITIES—BA 3/9—Dist. P. Wks. Office, 12th Naval Dist., Rm. C-112, San Bruno, provide operational, personnel and administrative facilities consisting of Part Q, labor and security bldg., Barracks (2nd Increment) six 252 man barracks, community bldgs. consisting of library and education center, theater, cafeteria and navy exchange shops, bank and post office, navy exchange warehouse and bowling alleys, Training Bldgs. A & B, branch mess hall, commissioned officers' mess (closed) structural fire station, public works shops and offices, aviation parts warehouse and installation of fire alarm equip. in certain existing facilities; Part R, navigation aids, radar air traffic control center and parachute bldg., Naval Air Station, NBy-25179, Spec. No. 25179/59. Over $5,000,000. CD 8/19.

BUILDINGS—BA

Wash., Bothell—HIGH SCHOOL—BA 2/25—Northshore School Dist. 147, 45,600 sq. ft., masonry high school addns. $643,000. Plans deposit $50. Liddle & Jones, 1716 Pacific Hy., Tacoma, archts.

California—MOUNTAIN HOME CONSERVATION CAMP—BA 3/1—State Div. Architecture, 1120 N St., Sacramento, Mountain Home conservation camp, division of forestry, incl. barracks bldg., mess hall, two office bldgs., equipment bldg., warehouse and shop bldg. and gas and oil bldg., Tulare Co., W. O. 4310GC-5. $400,000. Plans deposit $50.

▲ **Calif., San Diego**—HOME FOR RETIRED—BA 3/1—Neptune & Thomas, archts., 742 Colorado Blvd., Los Angeles, Calif. (selected list bidders), constr. home for the retired, in Pacific Beach, for Pacific Homes Development Co., 5250 Santa Monica Blvd., Los Angeles, Calif. $3,500,000. CD 12/10.

Calif., San Luis Obispo—CORPORATION YARD, etc.—BA 3/2—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, corporation yard and site development at California State Polytechnic College. W. O. 4304GC-6 and 4304GC-13. $500,000. Plans deposit $50.

▲ **Calif., Angeles**—SCHOOL—BA 3/11—Bd. Educ., 1425 S. San Pedro St., 2 story to incl. five class room bldg., auditorium and four other bldgs. for Pacific Palisade High School. $3,500,000. CD 3/20/58.

▲ **Calif., Los Angeles**—SCHOOLS—BA 3/25—Bd. Educ., 1425 S. San Pedro St., building trades and foods bldg. at Los Angeles Trade Technical College. $4,000,000. CD 6/9/58.

HEAVY CONSTRUCTION—LB & CA

† **S. S. Mullen, Inc.**, 220 River St., Seattle, Wash., LB $295,700, Est. $266,441, (10 bidders), Schedule C, radio relay bldgs. tower fdns., utilities, roads, drainage, etc., for Communications Facilities at Gold King Creek Air Force Station, Inv. 60-24, ALASKA. U. S. Eng., Box 7002, Anchorage, Alaska. Bids Feb. 2, CD 12/31;
C. Berg, Inc., 2730 Westlake Ave. N., Seattle, Wash., LB $264,480, Est. $255,625 (6 bidders), Schedules A&B, radio relay bldgs., etc., for Communications Facilities at Murphy Dome, and Pedro Dome Air Force Stations. Inv. 60-24 (Alaska);
Reed & Martin, Inc., 653 10th Ave., Fairbanks, Alaska, LB $296,748, Est. $240,537 (13 bidders), Schedule D, radio relay bldgs., etc., for Communications Facilities at Canyon Creek Air Force Station, Inv. 60-24 (Alaska).

▲† **Kaiser Engineering Div. Henry J. Kaiser Co.**, 1924 Broadway, Oakland, Calif., **Raymond International Inc.**, 140 Cedar St., New York 6, N. Y., **Macco Corp.**, 14409 Paramount, Paramount, Calif., and **Puget Sound Bridge & Drydock Co.**, 2929 16 Ave., S.W., Seattle, Wash., CA $28,899,000, missile silos, equipment terminals, propellant terminals, control centers, powerhouses, etc., for technical facilities, Mountain Home Air Force Base, ENG-45-164-60-1, WS107A-2, MOUNTAIN HOME, IDAHO. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Feb. 5, awarded Feb. 8. CD 2/9, under LB.

▲† **Marshall & Haas**, Belmont, Calif., LB $1,422,720 (8 bidders), earthwork, concrete lining and structures, for Wellton-Mohawk main conveyance channel, Station 1183 plus 77 AH to 2377 plus 05 AH, Gila Project, Spec. DC 5264, ARIZONA. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Feb. 4. CD 12/22.

ARIZONA—State Hy. Comn., 206 S. 17 Ave., Phoenix,
Gardner Constr. Co., P.O. Box 1751, Grand Junction, Colo., CA $614,415, select material cement treated base, b. conc. and emulsified asph. seal coat, beginning approx. 12 mi. north of Cameron and extending northerly over new alignment U.S. Rte. 89 for approx. 4 mi. toward Gap, Cameron-Navajo Bridge Highway, Coconino Co. Bids Jan. 29. CD 1/20.

ARIZONA—State Hy. Comn., 206 S. 17 St., Phoenix,
General Contracting Corp., 3260 S. 3 East, Salt Lake City, Utah, CA $199,353, 2-span 12 steel girder structure approach roadways and detours incl. grading, drainage, select material aggregate base b. conc. and asph. conc. for finishing course, Van Buren St. crossing of Phoenix Interstate Freeway. Bids Jan. 29. CD 1/15.

ARIZONA—State Hy. Comn., 206 S. 17 St., Phoenix,
Givens Constr. Co., P.O. Box 470, Phoenix, Ariz., CA $344,479, select material, cement treated base, b. conc. and emulsified asph. seal coat beginning in town of St. Johns on U.S. Rte. 260 and 666, extending southwesterly over U.S. Rte. 260 and 666 for 5 mi. Holbrook-Springerville Highway, Bids Jan. 22, awarded Feb. 1. CD 2/11.

ARIZONA—State Hy. Comn., 206 S. 17 St., Phoenix, Bids opened 1/29,
Rockey Mt. Constr. Co., Box 1033, Missoula, Mont., LB $822,460, grading, drainage beginning about 10 mi. northeast of Globe U.S. Rte. 60 and extending northeasterly over new alignment of approx. 1.3 mi. Globe-Show Low Highway, Gila Co. CD 1/11.

ARIZONA—State Hy. Comn., 206 S. 17 St., Phoenix,
Royden Constr. Co., P.O. Box 126, Phoenix, Ariz., CA $322,333, select material aggregate base b. conc. and emulsified asph. seal coat beginning approx. 15 mi. south of Gila Bend and extending northerly over new alignment of Santa Rte. 85 approx. 3¾ mi. toward Gila Bend, Gila Bend-Ajo Highway, Maricopa Co. Bids Jan. 29. CD 1/15.

WASHINGTON—State Hy. Comn., Dpt. Hys., Olympia,
Northwest Constr. Co., 3950 6 Ave. N.W., Seattle, Wash., CA $507,631, est. $550,000 (12 bidders), grading, surf., b. conc. paving, etc. 0.698 mi. Primary St. Hy. 2, middle crossing of Snoqualmie River easterly, FAP No. I-90-1(14)37, King Co. Bids Feb. 2, awarded Feb. 2. CD 1/18.

† **Purvis Constr. Co.**, P.O. Box 164, Yardley, Wash., LB $300,660, est. $346,634 (8 bidders), modifying Bldg. 2451, Fairchild Air Force Base, Inv. 60-42, SPOKANE, WASH. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bids Feb. 2. CD 1/25.

† **U. S. Eng.**, 1519 S. Alaskan Way, Seattle 4, Wash., cancelled bids to have been opened Feb. 25, five 10 x 14 ft., rein.-con. bldgs. for segregated storage magazines at 5 sites, WS 107A-1 Operational Base, Fairchild Air Force Base, ENG-45-108-60-76, SPOKANE, WASH. $200,000. Will re-advertise. CD 1/22.

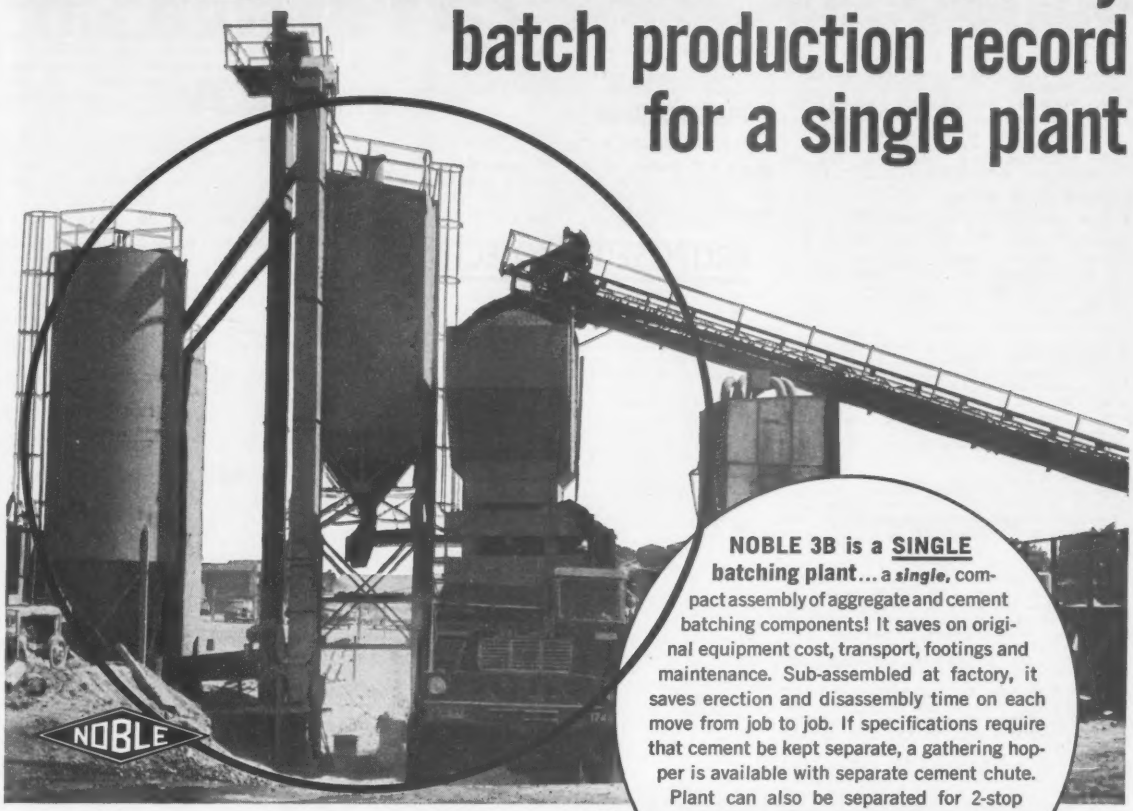
▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, Bids opened 2/4,
Matich Constructors & W. F. Maxwell Co., P.O. Box 356, Fontana, Calif., LB $5,542,784 (14 bidders), grading, surf. to constr. 6.1 mi. six lane freeway US 70-99 between 0.3 mi. west of jct. with US 60 west of Beaumont and 22nd St. in Banning, incl. extensive interchange facilities, VIII-Riv-19, 26, D, A, Beau, B, Ban., Riverside Co. CD 12/30.

▲ **CALIFORNIA** — State Div. Hys., 1120 N St., Sacramento,
C. K. Moseman, 727 Barron Ave., Redwood City, Calif., CA $2,926,802, sections of eight lane freeway and traffic separation structures on first unit of MacArthur Freeway, US Hy. 50 in Oakland, IV-ALa-5-OAK, Alameda Co. Bids Jan. 27, awarded Feb. 4. CD 1/29, under LB.

▲† **U. S. Eng.**, 1209 8th St., Sacramento, Calif., rejected bids Dec. 8, levee constr., stone protection, etc., San Joaquin River between Merced River and Turolumne River, Merced and Stanislaus Counties, Spec. 2615 ENG-04-167-60-1, CALIFORNIA. LB $1,261,127. CD 12/10, under LB.

(Continued on page 122)

NOBLE 3B PAVING PLANT sets new dry batch production record for a single plant



NOBLE 3B is a SINGLE batching plant... a ***single***, compact assembly of aggregate and cement batching components! It saves on original equipment cost, transport, footings and maintenance. Sub-assembled at factory, it saves erection and disassembly time on each move from job to job. If specifications require that cement be kept separate, a gathering hopper is available with separate cement chute. Plant can also be separated for 2-stop batching. For pouring structures, plant can be easily adapted to produce transit-mix concrete.

Batching at the spectacular rate of up to 450 cubic yards per hour, a single NOBLE 3B paving plant supplied all concrete for slip-form paving on the 200,000 *cubic yard* Los Angeles River Flood Control Project. The largest daily output obtained was 4500 *cubic yards*.

By planning daily concrete placement in excess of 3,000 cubic yards, the estimated job completion time was set at approximately 6 months. With batching and placing frequently exceeding 4,000 *cubic yards* daily, the job was completed in 4½ months — *6 weeks ahead of schedule*. Based on a previous Los Angeles River job and on Lemoore Naval Air Station and Los Angeles International Airport jobs, the contractor, Griffith Company, had anticipated the remarkably high output potential of the NOBLE 3B plant. These projects demonstrated conclusively that, with NOBLE 3B, 4,000 cubic yards per day and more could be supplied by a single plant at a tremendous savings not only in initial equipment and erection costs, but in all phases of the job.

NOBLE 3B batchers only, 1 for cement and 2 for aggregates, accurately weigh materials simultaneously for a ***single*** batch. Weights can be conveniently recorded on a NOBLE automatic graphic recorder. The factory installed NOBLE 3B electrical control center saves installation time and expense. All motors, complete with circuit breakers and magnetic starters, are pre-wired with quick-disconnect couplings to avoid expensive and time-consuming field wiring. Cement is rapidly and accurately metered by efficient feed screw rather than conventional gravity system. Positive cut-off by automatic louvre gate.

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(Continued from page 120)

James H. McFarland Co., 1465 Wallace Ave., San Francisco, Calif., LB $232,110, Grizzly Island Bridge, near Rio Vista, FAIRFIELD, CALIF. Solano Co., Court House, Fairfield, Calif. Bids Feb. 2.

▲ Norco Constr. Co., 21123 South Norwalk Blvd., Artesa, Calif., CA $1,044,963, Storm Drain Bond Issue Proj. No. 410 and Bond Issue Proj. No. 446, Bellflower, Long Beach and Lakewood, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Jan. 22. CD 1/27, under LB.

Bragato Paving Co., 500 Bragato Rd., Belmont, Calif., LB $329,974, (16 bidders), street extension, clearing, grubbing, earthwork, sub-base, untreated base, penetration treatment, cement treated base, storm drains, etc., MOUNTAIN VIEW, CALIF. City, City Hall, Mountain View, Calif. Bids Feb. 3. CD 1/13.

BUILDINGS—LB & CA

▲ Strom Constr. Co., 1727 Fawcett Ave., Tacoma, Wash., CA $1,457,868, general contract 6 bldgs. totaling 162,000 sq. ft. for Mount Tahoma HIGH SCHOOL, TACOMA, WASH. School Dist. No. 10, S. 8th and Tacoma Sts., Tacoma, Wash. Bids Jan. 21. CD 1/27, under LB;
Connors Electric Co., 103 S. 28 St., Tacoma, Wash., CA $506,747, electrical contract for Mount Tahoma High School (Tacoma, Wash.).

▲ Gordon H. Ball, 300 Camille Ave., Danville, Calif., LB $2,249,999 (10 bidders), 13 Sierra College BUILDINGS at Campus Site near Rocklin, AUBURN, CALIF. Sierra Junior College Dist., 222 Finley St., Auburn, Calif. Bids Feb. 4. CD 1/11.

C. & M. Homes, 705 Foothill Blvd., Azusa, Calif., Owner Builds, $710,500, 49 frame, stucco DWELLINGS, Soldano Ave., Dalton Dr., Pasadena Ave. and Holomar Ave., AZUSA, CALIF. CD 2/5.

▲ Williams & Burrows, Inc., 500 Harbor Blvd., Belmont, Calif., CA $1,867,680, rein.-con., steel frame OFFICE, BERKELEY, CALIF. California Farm Bureau Federation, 2223 Fulton Ave., Berkeley, Calif. Bids Dec. 22. CD 12/29, under LB.

Allison Honer Co., 312 North Main St., Santa Ana, Calif., LB $491,214, (9 bidders), 12 one-story wood frame, total floor area 37,350 sq. ft. BUILDINGS, incl. 350 car parking. 2,500 sq. ft. covered lunch area, outdoor athletic area, utility and sanitary services, ground development, paving, irrigation and landscaping, temporary facilities, Orange State College, W.O. 4414GC-27, FULLERTON, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Feb. 3. CD 1/22.

▲ Herbert Goldsworthy, Box 710, Santa Monica, Calif., LB $1,924,000, rein.-con. JUNIOR COLLEGE addn., NORWALK, CALIF Cerritos Junior College Dist., 11442, E. Aleondra Blvd., Norwalk, Calif. Bids Feb. 2. CD 1/5.

▲ Von-Hamm Young Co., Ltd., 720 Kapiolani Bldg., Honolulu, Hawaii, LB $1,322,000, conversion BUILDINGS to incl. GARAGE, SUPPLIES BLDG. for Department of Buildings, HONOLULU, HAWAII. City and Honolulu County City Hall, Honolulu, Hawaii. Bids Feb. 4.

CANADA

BUILDINGS—BA

▲ Que., Montreal—PLANT—BA 2/19—Coca-Cola Ltd., 90 Broadview Ave., Toronto, Ont. (selected list of bidders), plant, Boyce St. $1,000,000. Mathers & Haldenby, 10 St. Mark St., Toronto, Ont., archts. Bids Dec. 22 cancelled. CD 12/11.

Que., Montreal—WAREHOUSE, etc.—BA 2/23—Succ. C. E. Prefontaine, Bernard Forcier, Alain Prefontaine, Jean Paul Prefontaine, c/o Brassard & Warren, archts., 3711 Dupuis Ave., 2 story, 290x350 ft., concrete, brick warehouse, workshop, store and office, Blvd Metropolitan, $800,000. CD 9/23.

HEAVY CONSTRUCTION—LB & CA

Colucci Constr. Co. Ltd., 3433 Bathurst St., Toronto, Ont., CA $310,244, approx. 7,504 ft. 30 and 42 in. tunnel and open cut from Bryant Pumping Station northerly, West Don Trunk sewer extension, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Jan. 19, awarded Feb. 2. CD 1/7.

Felicien St. Pierre, Notre Dame du Bon-Conseil, Que., CA Est. $310,000, sewers, various locations, VICTORIAVILLE, QUE. Ville de Victoriaville, Village Hall, Victoriaville, Que. CD 1/4.

BUILDINGS—LB & CA

▲ Bird Constr. Co. Ltd., 1427 19th Ave. S.E., Calgary, Alta., LB $2,408,648, 200-bed HOSPITAL addn., Calgary General Hospital, CALGARY, ALTA. City, City Hall, Calgary, Alta. Bids Jan. 15. CD 12/2.

Burns & Dutton Concrete & Constr. Co. Ltd., 9004 125th Ave., Edmonton, Alta., CA $812,456, (10 bidders), ENGINEERING ADDN., University of Alberta, EDMONTON, ALTA. Dpt. P. Wks., Parliament Bldgs., Edmonton, Alta. Bids Jan. 21, awarded Feb. 1. CD 12/17.

▲ Bird Constr. Co. Ltd., Sargent and Erin Sts., Winnipeg, Man., CA $1,211,921, SCIENCE SERVICE LABORATORY addns., WINNIPEG, MAN. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Awarded Feb. 1. CD 1/6, under LB.

Tellier & Groleau, 2391 Place de Vaudreuil, Three Rivers, Que., CA $998,475, 105 row housing units, 20 APARTMENTS, CORNWALL, ONT. Central Mortgage & Housing Corp., 650 Lawrence Ave. W., Toronto, Ont. Bids Dec. 15, awarded Feb. 1. CD 12/22, under LB.

Lavern Asmussen Ltd., 836 Courtland Ave. E., Kitchener, Ont., CA $645,000 (14 bidders), Bayview HIGH SCHOOL, TORONTO, ONT. York Central Dist. High School Bd., Box 1220, Thornhill, Ont. Awarded Feb. 2. CD 2/5, under LB.

Head Constr. & Supply Co., 635 Tecumseh St. W., Windsor, Ont., Owner Builds, $600,000, BOWLING ALLEY addn., WINDSOR, ONT. J. P. Thomson Assocs., 15 Wyandott E., Windsor, Ont., archts.

PUERTO RICO

BUILDINGS—LB & CA

▲† A. C. Samford, Inc. & A. C. Samford Overseas, Inc., Box 1229, Albany, Ga., U.S.A., LB $2,614,359, (13 bidders), Capehart HOUSING, ENG-08-123-60-38, FORT ALLEN, PURTO RICO. U. S. Eng., Box 4970, Jacksonville 1, Fla., U.S.A. Bids Feb. 2. CD 1/6.

PROPOSED PROJECTS

WATER SUPPLY

▲ Alaska, Anchorage—City, City Hall, 8 m.g. water filtration plant with sedimentation basins, 5 hour water detention facility, Fort Richardson Area. $1,712,500. Alenar, Associated, Anchorage, Alaska, consult. engrs. Bids about August-September 1960. CD 10/14.

Calif., Napa—City, City Hall, voted $965,000 bonds Jan. 26, water distr. sys. and increase main line into city from Lake Hennessey. CD 12/9.

▲ Colo., Colorado Springs—City Dpt. P. Utilities, City Hall, 4 reservoirs, incl. approx. 4,750 acre ft. of water, $1,000,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. CD 6/23.

▲ Ill., Caseyville— Village, Village Hall, water extens., incl. looping of water mains for better pressure, 500,000 gal. tank on tower, sanitary sewer and treatment facilities, etc. $1,325,000. David J. Johnston, 129 N. 3rd St., East St. Louis, consult. engr.

Ill., Champaign—Northern Illinois Water Corp., 122 N. Walnut St., WW, treatment plant, N. Mattis Blvd., enlarge plant, Church and Harvey Sts. $650,000. Alvord Burrdick & Howson, 20 N. Wacker Dr., Chicago, Zone 6, consult. engrs. Bids in Fall.

▲ O., Dayton—Miami Conservancy Dist., 38 E. Monument St., constr. 2.8 mi. levees along 1.7 mi. stretch Great Miami Rivers, south of W. Carrollton dam. $2,184,617. Max Mitchell, owners ch. engr. Constr. 1960. CD 5/6/55.

▲ Okla., Ardmore—City, City Hall, 36 in. water line from Lake Arbuckle to Ardmore, $3,200,000. Ray Drain, City Hall, engr.

▲ Tex., Denton—City, City Hall, voted bonds Jan. 30, water mains, $1,335,000; elevated water storage, $75,000; water sys. rehabilitation, $200,000; addnl. water pumping unit, $90,000. CD 1/25.

▲ Tex., Eden—City, City Hall, dam and reservoir on Brady Creek, $1,500,000; water main from dam on Brady Creek to limits of Eden, $240,000; water tr. and pumping plant, $200,000, for municipal water supply.

▲ Tex., Edna—Jackson Co. Flood Control Dist., water supply, $4,200,000. Lockwood, Andrews & Newman, P.O. Box 13332, Houston, consult. engrs.

▲ Tex., Mexia—Mexia Municipal Water Supply Dist., Lake-Dam on Navasota River, $1,200,000. Koch & Fowler & Grafe, Inc., 3000 Lemmon Ave., Dallas, consult. engrs. CD 11/9.

Tex., Texarkana—Texarkana Municipal Suburban Water Supply Corp., WW imprvs., incl. supply and feeder mains. $500,000. Freese, Nichols & Endress, 407 Danciger Bldg., Fort Worth, consult. engrs. Bids in March.

▲ Va., Norfolk—City, Dpt. P. Wks., City Hall, bond election Mar. 15, reservoir and dam western branch Nansemond River, $3,000,000; extension of water distr. lines, $3,150,000; Moores Bridge Water Filtration Plant unit, $1,500,000. CD 12/24.

Va., Norfolk—Bd. Supervs., Norfolk Co., Courthouse, water line extension, Washington District, $841,000.

SEWERS, WASTE DISPOSAL

▲ Calif., Marysville—Linda County Water Dist., Hy. 99 East, voted bonds Jan. 26, sewers. $1,950,000. CD 12/30.

Conn., Pawcatuck — Town of Stonington, Town Hall, Stonington, sewers and sewage disposal plant. $700,000. Charles A. Maguire & Assocs., 1100 Turks Head Bldg., Providence, R. I., consult. engrs. CD 8/30/51.

▲ Ga., Marietta—Bd. Comrs. Cobb Co., Courthouse, sanitary sewage treatment plant, interceptor lines, collection lines, Cobb Co., $1,200,000. Hensley & Assocs., 209 Roswell St., consult. engrs.

Mich., Saginaw—City, City Hall, relief sewers, Fraser St. $730,330. Bids in 1960.

Minn., Shakopee—City, City Hall, sewage treatment plant $860,000. Bids about May. Toltz, King, Duvall, Anderson & Assocs., 1408 Pioneer Bldg., St. Paul, consult. engrs. CD 2/1/57.

▲ N. J., Old Bridge—Sewerage Auth., Madison Twp., sewer authority for Lawrence Harbor-Cliffwood Beach sections, Madison Twp. $1,350,000. Robert Baier, Town Hall, engr.

▲ N. C., Charlotte—City, City Hall, Sugaw Creek Sewage Treatment Plant addn., $2,500,000. J. N. Pease & Co., P.O. Box 10336, consult. engrs. CD 12/22/52.

O., Willoughby—City, City Hall, Erie Rd. trunk sewer and interceptor sewers, $699,000, Constr. this spring. Havens & Emerson, 640 Leader Bldg., Cleveland, Zone 14, consult. engrs.

Tex., Rosenberg—City, City Hall, sewage treatment plant, $669,000; sanitary sewer col. lines, $153,000.

▲ Tex., Texarkana—Texarkana Municipal Suburban Water Supply Corps., sewerage system imprvs., incl. lines, laterals, etc. $1,100,000. Freese, Nichols & Endress, 407 Danciger Bldg., Fort Worth, consult. engrs. Bids in March.

▲ W. Va., Morgantown — City, City Hall, interceptor sewer, 2 lift stations, treatment plant, Proj. No. P-W.Va.-3033. $3,450,000. Bids soon. Morris Knowles, Inc., Park Bldg., Pittsburgh, Pa., engr. CD 2/2.

BRIDGES

N. D., Fargo—City of Fargo and Great Northern Railway Co., G. V. Guerin, ch. engr., 175 E. 4th St., St. Paul, Minn., underpass structure, 2nd St. and Great Northern tracks, 50 ft. span, 44 ft. roadway, 4 tracks, two 5 ft. sidewalks, etc. $500,000. Constr. 1960.

▲ O., Jefferson—Comrs. Ashtabula Co., Courthouse, bond election May 3, 2-mill bridge repair levy to run 5 years and supply $500,000 per year, $2,500,000. CD 11/18.

Va., Norfolk—City, Dpt. P. Wks., City Hall, replacement York St. Bridge, $800,000. CD 12/11.

▲ QUEBEC—Dpt. P. Wks., Parliament Bldgs., Quebec City,
Levis Co.—700 ft. bridge, Chaudiere, River, St. Lambert, $1,300,000.

STREETS AND ROADS

▲ Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, access roads to Chavez Ravine Area, Dodger Ball Park site, incl. 5 approach roads (1) easterly approach, Solano Ave. (2) southerly approach, Yale St. and Bishops Rd. (3) westerly approach, Elysian Park Area (4) westerly approach, Scott Ave. (5) northerly approach, Riverside Dr. $2,740,000.

NEW YORK—State Dpt. P. Wks., State Office Bldg., Albany, Zone 1,
Orange Co.—reconstr. approx. 2.2 mi. Rte. 17 starting at Orange-Rockland County Line and extending northward to point about 1.3 mi. south of intersection Rtes. 17 and 210, FAI Proj. $600,000.

▲ OHIO—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15,
Cuyahoga Co.—repaving Brookpark Rd. from Schaaf Rd. west through Brooklyn Heights, Parma, Cleveland, Brooklyn and Brook Park to Rocky River, Bridge Rte. 17, Cleveland $2,000,000. William B. Henry, 10100 Broadway, Cleveland, Div. Hys. engr.

▲ O., Cleveland — Bd. Comrs. Cuyahoga Co., County Admin. Bldg., 1219 Ontario St., Zone 13,
widen, resurface Bassett Rd. from Detroit Rd. to Nickel Plate R.R., Westlake, $85,000.
relocate Chagrin River Rd., bridge at Aurora Branch of Chagrin River, Solon, $200,000.
widen, resurface Clague Rd. from Detroit to Westlake Rds., Rocky River, $240,000.
widen, resurface Green Rd. from north to south lines of Shaker Heights, Shaker Heights, $335,000.
widen, resurface Hummel Rd. from Engle Rd. to W. 130th St., Brook Park, $300,000.
widen, resurface, install drainage Lander Rd. from Cedar to Wilson Mills Rd., Mayfield Heights, $750,000.
widen, resurface Lee Rd. from Kinsman to south line of Shaker Heights, Shaker Heights, $130,000.
grading, draining, paving and bridge at Rocky River, Lewis Rd. from Bagley to Cedar Point Rds., Olmsted Falls, $300,000.
widen, resurface Richfield Rd. from Rayalton to Oakes Rds., Brecksville, $150,000.
widen, resurface Stumph Rd. from Snow to Pearl Rds., Parma Heights, $250,000.
rclocate Usher Rd. at Plum Creek, incl. bridge,, Olmsted Falls, $125,000.
connection between Lander and Miner Rds., Highland Heights, $200,000. CD 11/11/58.

O., Mt. Healthy—Meier Bros., 2313 Adams Rd., concrete paving, sewer-water lines for streets, off Adams Rd. $200,000. Edward Niemeier, 4484 Harrison Ave., Cincinnati, consult. engr.

Wyo., Riverton—City, City Hall, 316 E. Washington St., street imprvt. project. $250,000. Bids about Mar. 31.

▲ NOVA SCOTIA—Nova Scotia Dpt. Highways, Parliament Bldgs., Halifax,
limited access highway to link Sydney with Trans-Canada Highway, Sydney, $1,250,000.

AIRPORTS

Wis., Oshkosh—RUNWAY EXTENSIONS, etc.—Winnebago Co., plans by Auler Dreger Wiley & Wertsch, Inc., 105 Washington Ave., runway extensions, control tower, lights, relocating road and utilities, Winnebago County Airport, $500,000. CD 11/23.

LATIN AMERICA

▲ Mexico, Reynosa—GENERATING PLANT, etc.—Govt. of Mexico, Federal Electricity Comn., Main Admin. Bldg., Mexico City, 200,000 KW electric generating

(Continued on page 124)

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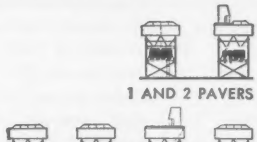

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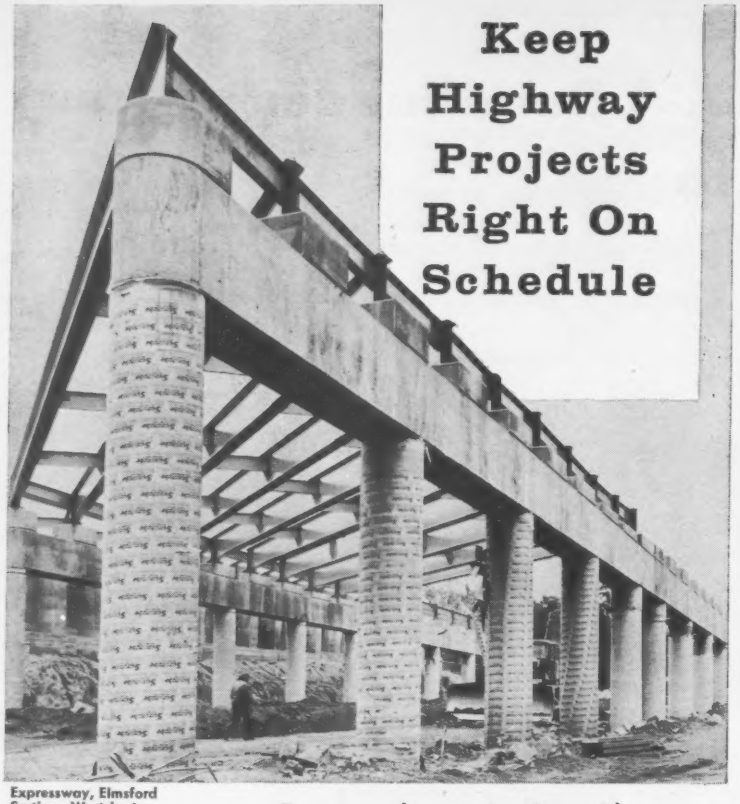

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(Continued from page 122)

plant, $12,000,000; electric transmission lines, $1,000,000.

U. S. POSSESSIONS

† **Canal Zone**—Panama Canal Co., Canal Zone, Balboa Heights, lock-locomotive towing track system, conversion, incl. altering track locks, electrical system bridges over emergency dam, etc. for Panama Canal. Gibbs & Hill, Penn Station, New York, N. Y., engrs.

PUBLIC BUILDINGS

▲† **Alaska, Juneau**—POST OFFICE, etc.—General Services Admin., 19th and F Sts., N.W., Wash., D. C., post office and courthouse. $15,710,000, no appropriation.

▲† **Ariz., Nogales**—BORDER INSPECTION STATION—General Services Admin., 19 and F Sts., N.W., Wash., D. C., border inspection station. $1,888,000, no appropriation.

† **Ark., Camden**—POST OFFICE—General Services Admin., 19 and F Sts. N.W., Wash., D. C., post office, etc. $887,000, no appropriation.

▲† **Calif., Bakersfield**—FEDERAL OFFICE—General Services Admin., 19th & F Sts., N.W., Wash., D. C., federal office. $1,658,000, no appropriation.

▲ **Calif., Los Angeles**—SCHOOLS—Bd. Educ., 1425 S. San Pedro St., plans by R. G. Johnson, 4645 Van Nuys Blvd., Sherman Oaks, and H. M. Silvestri, 801 Cahuenga Blvd., Los Angeles, Junior High School, Tampa and Lassen Sts., Granada Hills, $2,700,000; plans by H. L. Eggers, 600 S. Lafayette Park Pl., Lawrence Junior High School, $2,700,000; plans by Walker, Kallonzes & Klingerman, 488 S. San Vicente Blvd., Junior High School, California and Platt Sts., $2,700,000; plans by Kemper Nomland, 501 S. Boylston Ave., elementary school, 76 St. and Hooper Ave., $900,000; plans by Roy Donley, 8320 Melrose Ave., Junior High School, Firestone and Compton Blvds., $2,700,000. CD 6/9/58.

Calif., Martinez—PHYSICAL SCIENCE—Contra Costa Junior College Dist., 1005 Escobar St., plans by Charles F. Strothoff, 1855 Market St., San Francisco, and John Carl Warnecke & Assoc., 111 New Montgomery St., San Francisco, 2 story reinforced-brick, steel physical science, Diablo Valley Junior College, Concord. $500,000. CD 1/25.

▲ **Calif., Newport Beach**—SCHOOL—Newport Beach Elementary School Dist. plans by Hogdon, Brownell & Dorius, 400 W. Coast Hy., Intermediate School No. 7, Corona Del Mar. $1,100,000.

▲ **Calif., San Diego**—SCHOOL—San Diego Unified School Dist., 4200 Normal St., plans by Wulff & Fifield, 1422 6th Ave., 1 story, 103,000 sq. ft. frame, stucco William Howard Taft Junior High School, Mission Village Dist. $1,500,000. CD 11/9/56.

▲ **Calif., Stockton**—SCHOOLS—Lincoln Unified School Dist., 818 Lincoln Rd., voted $1,500,000 bonds and $4,500,000 state loan, Jan. 26, schools. CD 11/24.

▲ **Colo., Castle Rock**—SCHOOL—School Dist. RE-1, voted $1,400,000 bonds Feb. 1, Junior Senior High School, Wheeler & Lewis, 2215 W. 32 Ave., Denver, archts. CD 1/18.

▲† **Colo., Denver** — STORES DEPOT — General Services Admin., 19 and F Sts. N.W., Wash., D. C. GSA Stores Depot, $7,207,000, no appropriation.

† **Colo., Denver**—PRESSURE INJECTION—U. S. Eng., 1709 Jackson, Omaha 2, Neb., pressure injection waste disposal well, Rocky Mountain Arsenal. $400,000-$600,000. CD 10/20/54.

Colo., Fort Collins — LABORATORY — State Planning Comn., State Capitol, Denver, Water Research Laboratory for Colorado State University. $635,000.

▲ **Conn., Bridgeport** — HOUSING — Bridgeport Housing Auth., 252 Hallett St., plans by William F. Griffin, 33 Edna Ave., 150-unit housing for elderly. $2,000,000.

▲† **Conn., Wallingford**—POST OFFICE—General Services Admin., 19 and F Sts. N.W., Wash., D. C., post office, etc. $1,222,000, no appropriation.

▲† **Del., Wilmington**—COURTHOUSE, etc.—General Services Admin., 19 and F Sts. N.W., Wash., D. C., courthouse, customhouse and federal office. $7,110,000, no appropriation.

▲† **D. C., Wash.**—PRINTING OFFICE FIELD PLANT—General Services Admin., 19 and F Sts. N.W., printing office field plant. $2,339,000, no appropriation.

▲† **Fla., Gainesville**—POST OFFICE, etc.—General Services Admin., 19 and F Sts. N.W., Wash., D. C., post office and courthouse. $2,967,000, no appropriation. CD 2/10/50.

Ga., Eastman—HOSPITAL—Bd. Comrs. Dodge Co., Courthouse, plans by Hack & Whitehead, Henry Grady Bldg., Atlanta, 50-bed Dodge Co. Hospital addn. $950,000. Morris & Tindel, 510 Henry Grady Bldg., Atlanta, structural engrs. Morris E. Harrison, 770 Spring St. N.W., Atlanta, plumbing, heating, air-conditioning and electric engrs.

▲ **Ga., East Point** — HOUSING — East Point Housing Auth., 227 W. Cleveland Ave., plans by Abreu & Robeson, 141 Walton St. N.W., Atlanta, 150-unit Housing Project GA 78-B, $1,500,000. CD 11/15/50.

† **Ga., Statesboro** — POST OFFICE — General Services Admin., 19 and F Sts. N.W., Wash., D. C., post office, etc., $761,000, no appropriation.

▲† **Ga., Thomasville** — POST OFFICE, etc. — General Services Admin., 19 and F Sts. N.W., Wash, D. C., post office and courthouse, $1,394,000, no appropriation.

▲ **Idaho, Boise**—COURTHOUSE AND FEDERAL OFFICE—General Services Admin., 19th and F Sts. N.W., Wash., D. C., courthouse and federal office, **$9,006,000**, no appropriation.

▲ **Ill., Chicago**—SCHOOLS—Bd. Educ., 228 N. LaSalle St., Tilden Technical High School rehabilitation **$450,000**, Bids in 1960; plans by Friedman Alschuler & Sincere, 223 W. Jackson Blvd., Zone 6, Farren Elementary School addn., **$1,000,000**; plans by Perkins & Will, 309 W. Jackson Blvd., Zone 6, school, 48th and State Sts., **$1,000,000**; plans by Holabird & Root, 180 N. Wabash Ave., Zone 1, elementary school, 14th St. and Springfield Ave., **$1,060,000**, Bids about summer; plans by Samuelson & Sandquist, 6330 N. Cicero Ave., school, 85th St. and St. Lawrence Ave., **$1,000,000**. Bids in 1960. CD 6/11/57.

Ill., Rock Island—SCHOOLS—Bd. Educ., 541 21 St., bond election Mar. 1, elementary school, **$875,000**, Swanson & Maiwald, 501 15 St., Moline, archts., CD 3/26; Grant School, **$500,000**, CD 1/25; elementary school, Matthews Heights Section, **$650,000**, William Stuhr, 1800 3 Ave., Rock Island, archt. on latter 2 projects.

† **Ind., Seymour**—POST OFFICE, etc.—General Services Admin., 19th and F Sts. N.W., Wash., D. C., post office, etc. **$692,000**, no appropriation.

Iowa, Boone—SCHOOL—Bd. Educ., Community School Dist., plans by Karl Keffer Assocs., 202 Masonic Temple Bldg., Des Moines, elementary school, addns. to 2 schools, **$550,000.**

Ky., Bowling Green—DORMITORY—Commonwealth of Ky., Div. Purchases, Frankfort, plans by Walter Scott Roberts, 115 E. 4th St., Owensboro, men's dormitory for Western State College. **$575,000.** Southern Engineering Co., 322 W. Jefferson, Louisville, Zone 2, consult. engrs.

Ky., Louisville—SCHOOL—Louisville Bd. Educ., 506 W. Hill St., plans by D. X. Murphy & Bros., 707 Louisville Trust Bldg., Zone 2, Omer Carmichael Elementary School. **$700,000.** E. R. Ronald & Assoc., 554 S. 3rd St., Zone 2, consult. engrs.

▲† **Me., Augusta**—POST OFFICE, etc.—General Services Admin., 19th and F Sts. N.W., Wash., D. C., post office and federal office bldg. **$3,279,000**, no appropriation.

▲ **Me., Portland**—STATE SCHOOL FOR BOYS—State, Dpt. P. Imprvts., State House, Augusta, state school for boys. **$7,211,000.** Constr. 1960-1961.

▲ **Mass., Amherst**—DORMITORIES—University of Mass. Alumni Assoc., Amherst, plans by Louis W. Ross, 131 State St., Boston, Dormitory No. 23; Dormitory No. 24. **$524,000** each. Constr. 1960.

▲ **Mass., Salem**—HOUSE OF CORRECTION—Comrs. Essex Co., 32 Federal St., plans by Michael T. Libinski & Assoc., 25 Summer St., Lynn, House of Correction, U. S. Rte. 95, Topsfield. **$3,500,000.** Site changed from Middleton. CD 9/22.

† **Mass., Webster**—POST OFFICE, etc.—General Services Admin., 19th and F Sts. N. W., Wash., D. C., post office, etc. **$560,000**, no appropriation.

▲ **Mich., Dearborn**—LIBERAL ARTS BLDG., etc.—Bd. Educ., 5757 Neckel St., 4 story liberal arts bldg. **$1,770,000**, 2 story science bldg. **$902,000**; student center. **$404,000**; power plant **$194,000.** Henry Ford Community College. To go ahead 1960. CD 5/22/58.

▲† **Mich., Detroit**—IMMIGRATION and NATURALIZATION SERVICE CENTER—General Services Admin., 19 and F Sts. N. W., Wash., D. C., immigration and naturalization service center. **$1,112,000**, no appropriation.

† **Mich., Wyandotte**—POST OFFICE, etc.—General Services Admin., 19th and F Sts. N. W., Wash., D. C., post office, etc. **$585,000**, no appropriation.

Minn., Bloomington (P.O. Minneapolis)—SCHOOL—Bd. Educ. Independent School Dist. No. 271, voted $725,000 bonds Jan. 27, 1 story elementary school, 92nd St. and Emerson Ave. S. **$700,000.** Corwin, Seppanen & Assocs., E-818 First National Bank Bldg., St. Paul, archts. CD 1/15.

▲ **Minn., Canby** — SCHOOL—Bd. Educ. Independent School Dist. No. 891, $1,655,000 bond election Feb. 23, elementary school. **$800,000.** Matson & Wegleother, 2323 Wayzata Blvd., Minneapolis, archts. CD 11/24.

Minn., Chaska—SCHOOL—Bd. Educ. Independent School Dist. No. 112, plans by Armstrong & Schlichting, 2722 Park Ave., Minneapolis, high school. **$800,000.** Constr. 1960.

Minn., Farmington—SCHOOL—Bd. Educ. Independent School Dist. No. 192, voted **$845,000** bonds Jan. 28, 2 story high school addn. H. H. Swanson, 500 Sexton Bldg., Minneapolis, archt. Constr. 1960.

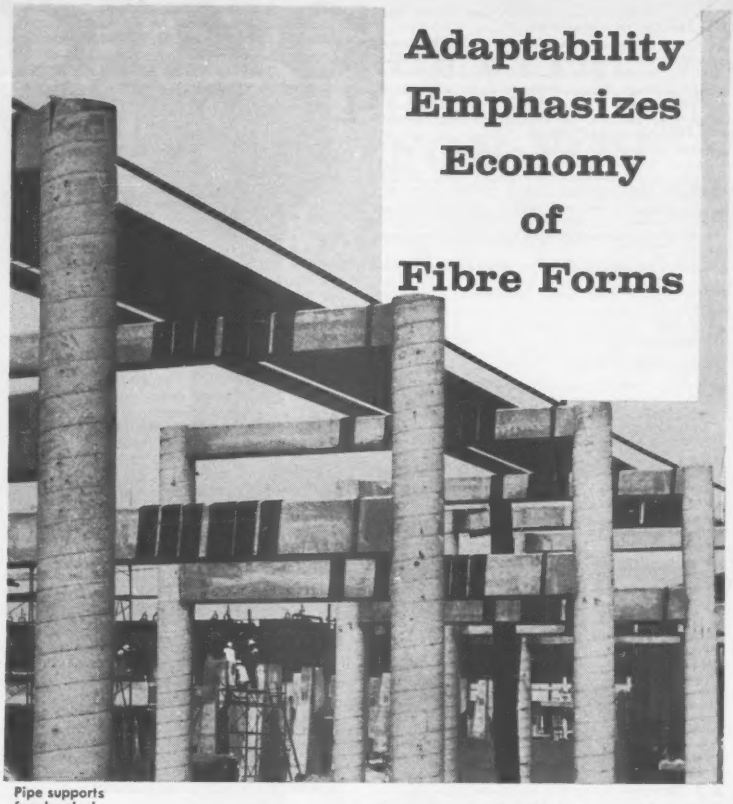
Minn., Pine River — SCHOOL — Bd. Educ. Independent School Dist. No. 117, voted $815,000 bonds Jan. 26, 1 story high school **$750,000.** Matson & Wegleitner, 2323 Wayzata Blvd., Minneapolis, archts. Constr. 1960.

▲ **Mo., Independence**—SCHOOLS—Bd. Educ., defeated **$1,200,000** bonds Jan. 26, schools. Marshall & Brown, 1016 Baltimore Ave., Kansas City, Mo., archts. CD 1/14.

▲† **Mo., Kansas City**—FEDERAL OFFICE—General Services Admin., 19th and F Sts. N. W., Wash., D. C., federal office bldg. **$39,036,000**, no appropriation.

Mo., Parkville—SCHOOL—Platte Co. School Dist. R-5, voted **$550,000** bonds Jan. 26, Park Hill Junior High School addn.

▲† **Mont., Billings**—COURTHOUSE AND FEDERAL OFFICE—General Services Admin., 19th and F Sts.



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4870

N. W., Wash., D. C., courthouse and federal office, $6,516,000, no appropriation.

▲† **Mont., Sweetgrass** — BORDER STATION—General Services Admin., 19th and F Sts. N. W., Wash., D. C., border station, $1,048,000, no appropriation.

▲† **Neb., North Platte**—POST OFFICE AND COURTHOUSE—General Services Admin., 19th and F Sts. N. W., Wash., D. C., post office and courthouse, $2,109,000, no appropriation.

▲† **Nev., Reno**—COURTHOUSE and FEDERAL OFFICE—General Services Admin., 19th and F Sts. N. W., Wash., D. C., courthouse and federal office, $4,403,000, no appropriation.

N. J., Medford—SCHOOL—Medford Bd. Educ., voted bonds, elementary school, $590,000, Norman W. Coates & William A. McSweeney, 31 De Hart St., Morristown, archts. CD 1/27.

† **N. M., Albuquerque**—STORES DEPOT ANNEX—General Services Admin., 19th and F Sts. N. W., Wash., D. C., stores depot annex, $602,000, no appropriation.

▲† **N. M., Santa Fe**—POST OFFICE, etc.—General Services Admin., 19th and F Sts. N. W., Wash., D. C., post office and federal office, $2,962,000, no appropriation.

▲ **N. Y., Brooklyn**—CLASSROOM—Bd. Higher Educ., 538 E. 80th St., New York, Zone 21, plans by Chapman, Evans & Delehanty, 50 Broadway, New York, Zone 4, Proj. HN-120, 5 story classroom, Brooklyn College. $2,500,000. To go ahead 1960. CD 9/17/57.

N. C., Asheboro—SCHOOL—Asheboro Dist. School Bd., Junior High School, $800,000. CD 4/15/52.

▲† **N. C., Bryson City**—POST OFFICE, etc.—General Services Admin., 19th and F Sts. N. W., Wash., D. C., post office and courthouse, $1,008,000, no appropriation.

▲† **N. C., Hickory**—POST OFFICE, etc.—General Services Admin., 19th and F Sts. N.W., Wash., D. C., post office, etc. $1,317,000, no appropriation. CD 2/10/50.

N. C., Oxford—HIGH SCHOOL—City Bd. Educ., plans by Haskins & Rice, 301 Hillsboro St., Raleigh, Mary Potter High School, $500,000.

O., Cleveland Heights — ADMINISTRATION — Cleveland Heights Bd. Educ., 1749 Lee Rd., Zone 18, administration bldg. $500,000. CD 11/11/55.

O., Dayton—HIGH SCHOOL—Wayne Twp. Bd. Educ., 7450 Taylorville Rd., plans by Rial T. Parrish, Knott Bldg., high school, $522,000. CD 11/10.

O., Jamestown—HIGH SCHOOL—Greeneview School Dist. bond election May 3, high school, $960,000.

▲ **O., Swanton**—SCHOOLS—Spencer-Sharpless Bd. Educ., Rte. 3, high school and Junior High School, $1,000,000.

O., Toledo—FAMILY COURT CENTER—Bd. Comrs. Lucas Co., Courthouse, bond election May 3, family court center addn., Michigan St. $650,000.

▲† **Okla., Tulsa**—POST OFFICE, etc.—General Services Admin., 19th and F Sts. N.W., Wash., D. C., post office and federal office, $10,590,000, no appropriation.

▲† **Ore., Medford** — POST OFFICE — General Services Admin., 19th and F Sts. N.W., Wash., D. C., post office, etc. $2,365,000, no appropriation.

Ore., Oswego—HIGH SCHOOL—Lake Oswego School Dist., 2455 SW Country Club, voted bonds, high school addn., $865,500; Uplands Elementary School, $472,500. Whitney, Hinson & Jacobsen, Failing Bldg., Portland, archts.

▲ **Ore, Troutdale**—SCHOOL—Multnomah County School Dist. No. 7, Rte. 2, Box 563, bond election Mar. 1, schools, $1,500,000. Nov. 23 election rejected issue. Edmundson & Kochendoerfer, Henry Bldg., Portland, archt. CD 10/28.

▲† **Pa., Johnstown**—POST OFFICE—General Services Admin., 19 and F Sts. N.W., Wash., D. C., post office addn., $1,669,000, no appropriation.

▲† **Pa., Lebanon** — POST OFFICE — General Services Admin., 19 and F Sts. N.W., Wash., D. C., post office, $1,091,000, no appropriation. CD 12/5/49.

† **R. I., Westerly** — POST OFFICE — General Services Admin., 19 and F Sts. N.W., Wash., D. C., post office, $820,000, no appropriation. CD 12/5/49.

▲† **S. C., Charleston** — FEDERAL OFFICE — General Services Admin., 19 and F Sts. N.W., Wash., D. C., federal office, $3,798,000, no appropriation.

▲ **S. D., Brookings**—HOSPITAL—City, City Hall, 60 bed city hospital, $1,000,000. Ellerbe & Co., 333 Sibley St., St. Paul, archts.-consult. engrs. (Correction—type of construction). CD 12/9.

▲† **S. D., Sioux Falls**—POST OFFICE—General Services Admin., 19 and F Sts. N.W., Wash., D. C., post office. $3,548,000, no appropriation.

▲† **Tenn., Dyersburg**—POST OFFICE—General Services Admin., 19 and F Sts. N.W., Wash., D. C., post office, etc. $1,202,000, no appropriation.

▲ **Tex., Austin** — SCIENCE RESEARCH — Bd. Regents, Main Admin. Bldg., Austin, masonry atomic science research bldg., University of Texas. $6,000,000.

▲† **Tex., Austin**—POST OFFICE, etc.—General Services Admin., 19th and F Sts. N.W., Wash., D. C., post office and federal office, $12,929,000, no appropriation.

▲ **Tex., Brownsville**—POWER PLANT—City, City Hall, electric power plant addn. $4,000,000. Black & Veatch, 1500 W. Meadow Lake Parkway, P.O. Box 8405, Kansas City, Mo., consult. engrs. CD 10/30/56.

▲† **Tex., El Paso**—BORDER STATION—General Services Admin., 19th and F Sts. N.W., Wash., D. C., Border Station, Cordova Island, $1,342,000, no appropriation.

▲ **Utah, Ogden**—COURTHOUSE, etc.—General Services Admin., 19th and F. Sts. N.W., Wash., D. C., courthouse and federal office. $6,340,000, no appropriation.

▲† **Vt., Montpelier**—POST OFFICE, etc.—General Services Admin., 19 and F. Sts. N.W., Wash., D. C., post office and courthouse, $1,654,000, no appropriation.

▲ **Va., Newport News**—SCHOOL—Dpt. Educ., State of Virginia, State Office Bldg., School Bldg., Peninsula Technical Institute (division of College of William and Mary). $2,000,000.

Wash., Longview—GRAIN ELEVATOR—Port of Longview, 2 m.g. bushel export grain elevator. $800,000. North Pacific Grain Growers Assn., lessee. CD 11/16/56.

▲† **Wash., Richland**—POST OFFICE and FEDERAL OFFICE—General Services Admin., 19th and F Sts. N.W., Wash., D. C., post office and federal office, $9,790,000, no appropriation.

Wash., Seattle—ADMINISTRATION—Port of Seattle, Bell St. Terminal, Zone 1, plans by Durham, Anderson & Freed, 1100 Denny Way, administration bldg. at Shilshole Bay Marina, $900,000. Constr. this year. G. T. Treadwell, c/o owner, ch. engr. CD 2/2.

▲ **W. Va., Athens**—DORMITORY, etc.—Concord College, Athens, plans by Alex B. Mahood, Law and Commerce Bldg., Bluefield, women's dormitory, $600,000; faculty and married students' apartments, $448,000. CD 12/29.

▲† **Wyo., Cheyenne**—FEDERAL OFFICE, etc.—General Services Admin., 19th and F Sts. N.W., Wash., D. C., federal office for Post Office Dpt., U. S. Courts and other federal agencies. $6,699,000, no appropriation.

Man., North Kildonan—COLLEGIATE—River East School Div. No. 9, 1400 Henderson St., plans by Ward & MacDonald, 219 Kennedy St., Winnipeg, collegiate, $700,000.

▲ **Ont., London**—NURSES SCHOOL, etc.—Bd. Trustees Victoria Hospital plans by Charles H. Gillin, 389 Queens Ave., 6 story, bsmnt, brick, steel nurses school and residence, $1,250,000. CD 10/2/52.

▲ **Ont., Sarnia** — HIGH SCHOOL — Bd. Educ., 190 Wellington St., high school, Sarnia Twp. $1,000,000.

Ont., Stratford—HOSPITAL—Stratford General Hospital Bd., hospital addn. $800,000-$1,000,000. CD 4/20/45.

Sask., Yorkton—HOSPITAL—Yorkton Hospital, Yorkton, mental hospital, $500,000. CD 10/22/51.

COMMERCIAL BUILDINGS

Ala., Huntsville—MOTEL, etc.—Pac Co., Inc., c/o Earl Cloud, atty-at-law, Huntsville, 2 story, brick, 100-unit motel and restaurant, N. Memorial Parkway. $600,000. Blevins Engineering Co., Huntsville, archt.-consult. engr.

▲ **Alaska, Fairbanks**—APARTMENT—M. R. McEntire, et al, c/o McEntire & Pendergrast, archts., 131 5th, Anchorage, apartment. $1,000,000. CD 2/12.

Calif., Azusa—DWELLINGS—C&M Homes, 705 W. Foothill Blvd., 49 dwellings, Tract 18093. $750,000.

Calif., Canoga Park—DWELLINGS—Carol Estates, 8621 Wilshire Blvd., Los Angeles, plans by Duncan & Conroy, 13605 Ventura Blvd., Sherman Oaks, 40 dwellings, Tract 24978. $500,000.

▲ **Calif., Canoga Park**—DWELLINGS—Valley Park Estates, 23000 Van Owen St., plans by Duncan & Conroy, 13605 Ventura Blvd., Sherman Oaks, 85 dwellings, Tract 22230. $1,000,000.

▲ **Calif., El Cajon**—DWELLINGS—Los Sandos Estates, 6381 Hollywood Blvd., Los Angeles, plans by Edward E. Carver, 7521 E. 3rd St., Downey, 108 dwellings, Ellen Lane Park, Unit No. 2. $1,100,000.

▲ **Calif., Hayward**—SUPERMARKETS, etc.—Sol Gilberg, 359 51 St., Oakland, Calif., plans by David T. Johnson, 1440 Broadway, Oakland, 2 supermarkets and bank. Constr. 1960; shops for 1961 and department store for 1962. $12,000,000.

Calif., La Jolla—DWELLINGS—Leonard Drogin, 6610 El Cajon Blvd., San Diego, plans by Palmer & Krisel, 3602 Midway Dr., San Diego, 60 dwellings, Scenic Heights Dr. $750,000.

Calif., Palm Springs—DWELLINGS—Southland Development Co., 7612 Sepulveda Blvd., Van Nuys, plans by Duncan & Conroy, 13605 Ventura Blvd., Sherman Oaks, 76 dwellings, Gateway Estates, Unit I. $800,000.

▲ **Calif., Torrance**—SHOPPING CENTER—Del Amo Estate Co., c/o Welton Becket & Assoc., archts., 5651 Wilshire Blvd., Los Angeles, Del Amo Shopping Center, Bldg. "G". $2,600,000.

Calif., Westminster—DWELLINGS—H-B Co., 166 E. 17th St., Costa Mesa, plans by David Freedman, 221 N. Robertson Blvd., Beverly Hills, 58 dwellings, Tract 3155. $698,088.

▲ **Colo., Denver** — SHOPPING CENTER — Owner c/o Walter Koelbel, 1845 S. Sherman, plans by Fisher & Davis, 821 17 St., 80,000 sq. ft. shopping center, E. Hampden Ave. and S. Glencoe, $1,500,000.

Colo., Grand Junction—MEDICAL-DENTAL BLDGS.—Bookcliff Development Co., 2131 N. 7 St., plans by Van Duesen & Bliska, 421 Glenwood Ave., nine 2 story, 24x40 ft. medical-dental bldgs. $600,000.

Conn., Danbury—HOUSES—Louis F. Hardy, Miry Brook, 70 houses, Spruce Mountain, $700,000.

Conn., East Haven and North Branford — HOUSES — Chapell, Inc., Rte. 80, East Haven, 65 houses, "Cedarcrest Heights", Rte. 80, $650,000.

Conn., New Haven — LABORATORY — Grace-New Haven Community Hospital, 789 Howard Ave., plans by York & Sawyer, 101 Park Ave., New York, N. Y., expand Farnam operating suite, consolidate laboratory space, reconstruct area for diagnostic radiology, chemotherapy and cardiac programs, Howard Ave. $730,000. Bids in April 1960. Wilcox & Erickson, 11 E. 44 St., New York, N. Y., consult. engrs. Krey & Hunt, 292 Madison Ave., New York, N. Y., mechanical engrs. CD 6/8.

Conn., New Haven—AUDITORIUM—Yale University, 119 College St., plans by Douglas Orr, 111 Whitney Ave., Mary S. Harkness Memorial Auditorium, $591,000. Henry A. Pfisterer, 111 Whitney Ave., consult. engr. CD 12/17.

Conn., Old Saybrook—MOTEL—John E. Hayes, 170 Sigourney St., Hartford, motel, Springbrook Rd. $600,000.

▲ **D. C., Wash.**—OFFICE—Remington Rand Corp., 315 4 Ave., New York, N. Y., plans by Mills, Petticord & Mills, 3308 14 St. N.W., 6 story, concrete, steel office, 2121 Wisconsin Ave. N.W. $1,400,000.

▲ **Fla., Palm Beach**—APARTMENTS— Mayello Enterprises, Inc., c/o James Gamble Rogers, Lovelock & Fritz, archts.-consult. engrs., Post Office Drawer 236, Winter Park, 8 story, concrete co-operative apartments, with twelve 2 story bldgs. $3,000,000.

Ga., Albany—YMCA BLDG.—Albany Young Men's Christian Assn., 401 Pine St., plans by Rayburn S. Webb, 300½ Broad Ave., YMCA bldg. $500,000.

▲ **Ga., Atlanta**—APARTMENT—Bellemead Avenue Apartments, c/o James C. Wise, Simpson, Aiken & Assocs., archts., 873 Spring St. N.W., 225 apartment units. $4,000,000.

▲ **Hawaii, Honolulu**—OFFICE—Skyline Developers, 1226-B Queen Emma St., plans by Bradley & Wong, AIA 1220 Waimanu St., Honolulu, 11 story co-operative air conditioned office. $2,000,000.

▲ **Ill., Chicago**—MOTEL—Dr. Martin L. Gecht, 1239 W. 18th St., plans by Seymour Altman, 6007 N. Jersey Ave., 4 and 7 story, 177 unit motel, swimming pool, 11th and Michigan Blvd. $3,500,000. Bids in Spring.

▲ **Ill., Chicago**—HOSPITAL—Rest Haven Rehabilitation Hospital, 1409 S. California Ave., plans by H. Epstein & Sons Co., 2011 Pershing Rd., Chicago, Zone 9, hospital addn. $1,000,000.

Ill., Decatur—DORMITORY—Millikin University, 1184 W. Main St., 80 women dormitory and dormitory remodeling. $546,000. CD 11/30/45.

▲ **Ind., Chesterton**—SHOPPING PLAZA—Vito J. Monaco, c/o A. H. Rubloff & Co., 100 W. Monroe St., Chicago, Ill., plans by Sid. H. Morris, 134 N. La Salle St., Chicago 2, Ill., Portage Shopping Plaza, incl. 18 shops, Willow Creek Rd. and Central Ave. $2,000,000.

▲ **Ky., Louisville**—EXECUTIVE HOUSE—Fred Walters, 7911 Reading Rd., Cincinnati, O., and Lawson Jaffee, 3733 Wales Dr., Dayton, O., plans by Frederic P. Weidersun Assocs., 65 Roosevelt Ave., Valley Stream, N. Y., 1 story and 4 story, 410-unit L-shaped Executive House Motor Inn, $3,000,000. Carlos B. Schoeppel, 2944 Biscayne Blvd., Miami, Fla., assoc. archt. CD 7/17.

▲ **Me., Bangor**—SHOPPING CENTER—Elm Farm Foods Co., 600 Columbia Rd., Dorchester, Mass., plans by Sumner Schein, 271 Huntington Ave., Boston, Mass., shopping center, Broadway and Arctic Sts. $1,500,000. Constr. 1960. CD 2/18/59.

▲ **Mass., Falmouth** — HOSPITAL — Falmouth Hospital Assoc., 230 Main St., plans by Markus & Noks, 251 Columbus Ave., Boston, hospital. $1,000,000. CD 11/11/58.

Mass., North Easton—DORMITORY—Stonehill College, Washington St., plans by Emery J. Laliberte, 53 Moraine St., Brockton, men's dormitory. $700,000. Constr. 1960.

▲ **Mass., Springfield**—POST OFFICE—Post Office Dpt., c/o Real Estate Dpt., Boston, plans by Arthur Winebaum, 316 Stuart St., Boston, U.S. Post Office, Tapley Annex Bldg. extension, (build-lease) 70 Tapley St. $1,500,000. Constr. 1960.

Mass., Woburn—YMCA—Young Men's Christian Assn., 553 Main St., plans by Edward J. Tedesco, 15 Pleasant St., YMCA "Apple Acres" 184 Salem St. Approx. $600,000. Constr. 1960.

▲ **Mich., Lansing**—OFFICE—Lansing Business University, 130 W. Ionia St., plans by George Baumgarten, 425 Cherry S.E., Grand Rapids, 8 story, 68x72 ft. rein.-concrete office. $1,000,000.

Mo., St. Louis—DENTAL SCHOOL—Washington University, Lindell and Skinker Blvds., 4 story, dental school addn., 4559 Scott Ave. $700,000. Constr. start Spring 1960.

▲ **Mo., St. Louis**—STUDENT CITIZENSHIP CENTER—St. Louis University, 221 N. Blvd., Student Citizenship Center, incl. student union facilities, meetting rooms for residents of area, etc. $2,500,000.

N. H., Concord—SHOPPING CENTER—Capital City Shopping Center, c/o L. O. Geoffrion, archt., 1240 Maplewood Ave., Portsmouth, shopping center, South Main St. Approx. $650,000. Constr. in 1960.

▲ **N. J., Erlton**—SHOPPING CENTER—Harold Sarshik, Haddonfield, plans by Leonard Evantash, 225 S. 15 St., Phila., Pa., shopping center, bowling alley and service station. $1,000,000. Bids soon.

▲ **N. J., Montclair**—HOSPITAL—Bd. Trustees Montclair Community Hospital, 140 Harrison Ave., plans

(Continued on page 128)

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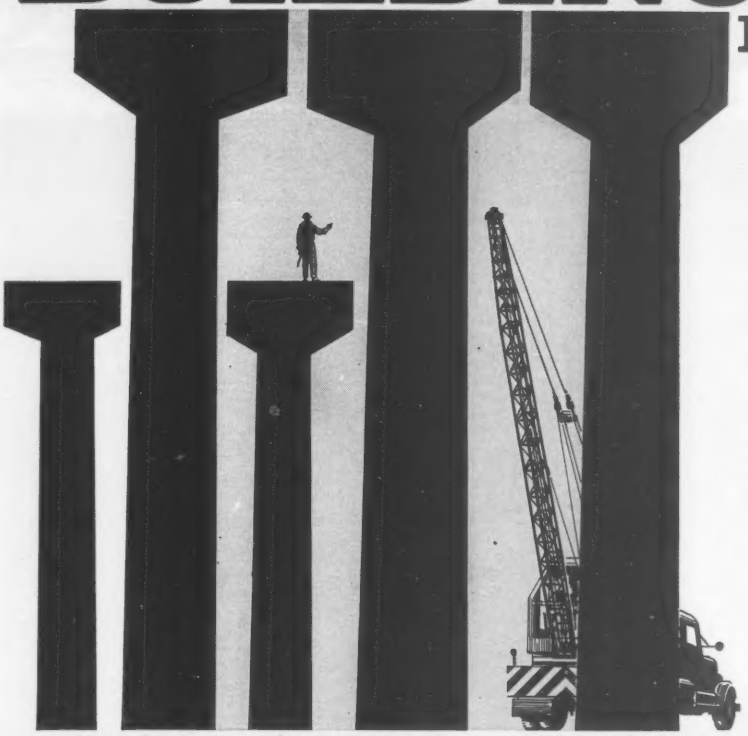

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(Continued from page 126)

by Ferrenz & Taylor, 1451 Broadway, New York, N. Y., 40-bed hospital wing, out-patient, office, Harrison Ave. $1,000,000. Constr. this year.

N. J., Moorestown—APARTMENT—Owner, c/o Robert C. Pitman, 221 Chester Ave., 7 story, 90-unit apartment. $750,000.

▲ N. Y., New York—RESIDENCE HALL—Archidocesan Bldg. Comn., 451 Madison Ave., Zone 22, plans by William J. Boegel, 12 E. 48th St., Zone 17, Cardinal Spellman Residence Hall at Mt. St. Vincent College, Riverdale. $2,000,000.

▲ N. Y., Port Jefferson—HOSPITAL—St. Charles Hospital, Prospect St., 5 story hospital. $3,583,000. To go ahead 1961.

▲ N. Y., Tarrytown—DORMITORY, etc.—Marymount College, plans by Eggers & Higgins, 100 E. 42nd St., New York, Zone 17, dormitory, library and chapel. $8,500,000.

N. C., Charlotte—OFFICE—Vinson Realty Co., 221 S. Church St., plans by Charles M. Grier, Wilder Bldg., 30,000 sq. ft. office, 1301 Morehead St. $500,000.

N. C., Greensboro—HOUSES—Eugene Gulledge, 314 Warren St., 53 houses, Lincoln Heights, $500,000.

▲ N. C., High Point—MOTEL, etc.—New South Furniture Exposition, c/o A. B. Raymer, Statesville, plans by Wayne Koontz, Salisbury, 60-unit motel, restaurant, 3 story exhibition bldg., Main, Green, Commerce and Willowbrook Sts. $2,000,000. CD 11/11.

▲ O., Mentor—HOMES—Campus Constr. Co., 12728 Woodland Ave., Cleveland, Zone 20, plans by Hart & Weiss, 12728 Woodland Ave., Cleveland, 330 homes, Hometown Subdivision No. 1, $6,000,000. CD 12/3.

▲ O., Mt. Healthy—HOUSES—Meier Bros., 2313 Adams Rd., 100 brick houses, streets off Adams Rd. $2,000,-000. Edward Niemeier, 4484 Harrison Ave., Cincinnati, consult. engr.

▲ O., Sylvania—MEDICAL CENTER, etc.—Crestview of Ohio, Harroun Rd., (second phase) Medical Center and 8 story hospital, Arrowhead and Harroun Rds. $3,000,000. Constr. in mid-1961. CD 6/25/57.

▲ Pa., Clifton Heights—MERCHANDISE MART—Saul G. Morgernstern & Morris A. Kravitz, Inc., 225 S. 15 St., Phila., plans by Eventash & Friedman, 225 15 St., Phila., 3-level, 192,000 sq. ft. masonry, steel merchandise mart, Baltimore Pike. Over $1,500,-000. Bids soon. CD 1/28.

▲ Pa., Jenkintown—APARTMENT and OFFICE—Foxcroft Building Corp. plans by George S. Idell, 117 S. 17 St., Phila., apartment and office, Meetinghouse Rd., etc. $2,000,000. CD 12/24.

Pa., Malvern—HOSPITAL—Rush Hospital, 3301 Lancaster Ave., plans by Vincent G. Kling, 917 Corinthian Ave., Phila., hospital expansion. $500,000.

▲ Pa., Media—HOSPITAL—Riddie Memorial Hospital plans by Lawrie & Green, 321 N. Front St., Harrisburg, Riddle Memorial Hospital. $2,500,000. Edgar T. Clapp, 1930 N. 2 St., Harrisburg, consult. engr. CD 9/2/58.

▲ Pa., Phila.—APARTMENT—Owner, c/o Mendes Solis, Land Title Bldg., 27 story apartment, 17 and Pine Sts. Over $2,500,000.

▲ S. C., Darlington—HOUSES—John Crosland Co., 122 E. 3 St., Charlotte, N. C., 200 house subdivision, Spring Valley, $2,000,000.

▲ Tex., Austin—OFFICE—Southwestern Bell Telephone Co., 308 S. Akard St., Division Office, N.W. of Capitol. $2,000,000.

▲ Tex., Dallas—APARTMENTS—Hal Anderson & Associates, 5335 Meaders Lane, plans by Cole Smith, 3603 Lemmon Ave., 75,000 sq. ft., 32-unit Luxury Royal Arms Apartments, 6300 Bendera St. $1,250,000.

Tex., Dallas—OFFICE, etc.—Murray Investment Co., 1315 Pacific Ave., 3-story, concrete frame office and parking garage, N. Akard and Munger Sts. $750,000.

Tex., Dallas—OFFICE—Owner, c/o Emil A. Fretz, archt., 5526 Dyer St., 3 story, 55,000 sq. ft., rein.-con. frame office, $510,000.

Tex., Dallas—MOTEL—Owner, c/o Williams & Reeves, archts., 3400 University Blvd., 120-room, masonry motel, Loop 12 and Hy. 183. $750,000.

▲ Tex., Dallas—HOTEL, etc.—Trammell Crow, 425 S. Field St., plans by Harold A. Berry, 14th Floor Hartford Bldg., and H. H. Harris, 3603 Lemmon Ave., Hotel No. 1, $4,000,000; Hotel No. 2, $5,000,000; 110-bed hospital, $3,000,000; Medical, $2,500,000; Office, $4,000,000; Bowling Center, $500,000, Preston Rd. and Royal Lane, in Valley View "Shopping City" area. CD 2/2.

▲ Tex., Dallas—MOTEL—Del E. Webb Motor Hotel Co., 2727 N. Central Ave., Phoenix, Ariz., 250 to 400-room motel, near Municipal Airport, Love Field, $4,000,000.

▲ Tex., Farmers Branch—DWELLINGS—Marine Development Corp., Republic National Bank Bldg., 14 dwellings, $420,000; 18 dwellings, $540,000; 16 dwellings, $438,000, in Brookhaves Club Estates and adjacent area.

▲ Tex., Farmers Branch—SHOPPING CENTER—Marine Development Corp., Fritz Hawn, pres., Republic National Bank Bldg., Shopping Center, site in Brookhaven Club Estates, $1,250,000.

▲ Tex., Fort Worth—SHOPPING CENTER—Sears Roebuck & Co., 925 S. Homan St., Chicago, Ill., plans by Preston M. Geren, 1607 Ft. Worth National Bldg., Fort Worth, and George L. Dahl, 2101 N. St. Paul St., Dallas, 1 and 3 story, 800,000 sq. ft. masonry, concrete, steel seminary South Regional Shopping Center, air conditioned. $5,000,000. Loebl, Schlossman & Bennett, 333 N. Michigan Ave., Chicago, Ill., consult. archts. CD 12/31/58.

Tex., Houston—SHOPPING CENTER—Meyerland Co., 4703 Jason St., plans by McCleary & McCormick, 3270 Sul Ross St., masonry shopping center, S. Post Oak Rd. $500,000. Bids soon. R. L. Reid, Inc., 2506 Richton Rd. and Brown & Anderson, c/o 2506 Richton Rd., consult. engrs. CD 11/27.

▲ Tex., Houston—BLDG. REMODELING—Pappas Refrigeration Co., Louisiana and Preston St., plans by Paul & Paul, 401 Louisiana St., 8 story commercial bldg., refacing, remodeling, Louisiana and Preston St., $1,000,000. Vogt & Clouse, 2712 Danvale St. and Jas. H. Howard & Associates, 4101 San Jacinto St., consult. engrs.

Tex., Jacksonville—HOTEL-MOTEL—Syndicate, c/o W. E. Bailey, Jacksonville, 80-room hotel-motel, $500,000.

Tex., Orange—SHOPPING CENTER—J. Weingarten, Inc., 601 Lockwood St., plans by Irving R. Klein & Associates, 1317 Austin St., shopping center, $500,000. CD 3/12/56.

▲ Va., Charlottesville — MOTOR HOTEL — Congress of Motor Hotels, 2503 Santa Monica Blvd., Santa Monica, Calif., plans by Ashton & Wilson, 10819 Santa Monica Blvd., Los Angeles, Calif., 4 story motor hotel, High St. $1,500,000.

▲ Va., Fairfax—MEDICAL CENTER—Medical Building, Inc., 6318 Wilston Dr., Falls Church, medical center, Arlington Blvd. near Olin Dr. $1,500,000.

Va., Hampton—STORE—M. H. Fishman Co., 225 5 Ave., New York, N. Y., store, Military Highway. $600,000. Mason's Inc., lessee.

▲ Va., Richmond—HOME SUBDIVISION—Sydney Realty Corp., 2020 W. Broad, 560 home subdivision, West End Manor. $5,600,000.

▲ Va., Richmond—SHOPPING CENTER—Sydney Realty Corp., 2020 W. Broad, Laurel Park Shopping Center. $1,000,000.

▲ Wash., Seattle—MOTEL—Cosmopolitan Bldrs., Inc., 46 Etruria St., plans by Ayer & Lamping, 1314 E. John St., motel, 18601 Pacific Hy. S. $1,600,000

W. Va., Buckhannon—DORMITORY—West Virginia Wesleyan College, plans by Larson & Larson, Reynolda Sta., Winston-Salem, N. C., dormitory. $750,000. Bids in February. CD 2/24.

▲ B. C., Powell River—SHOPPING CENTER—J. Aceman & S. H. Rosen, 470 Granville, Vancouver, plans by Dirassar & James, 413 Granville St., concrete block shopping center, incl. 2 story, 40,000 sq. ft. department store, 15,000 sq. ft. Safeways store, 12,000 sq. ft. Woolworth store, bowling alley, office, specialty shops, 600 car parking. $2,500,000.

▲ Ont., Hamilton—APARTMENT—Radovan Radovich, c/o Town of Stoney Creek, 11 Lake St. S., apartment, north of King St. and east of Lake Ave. $2,000,000.

Ont., London—OFFICE—Co-operators Insurance Co., 402 Richmond St., 7 story office, King St. $500,000.

▲ Ont., Ottawa—SHOPPING CENTER—Ivanhoe Corp., 7101 Cote St. Luc Rd., and Steinbergs Ltd., 5400 Hochelags St., both Montreal, Que., plans by Dawson & Baker, 4463 Sherbrooke St. W., Montreal, Que., Eastview Shopping Centre, supermarket, Riverside Dr. $1,250,000. Felix M. Kraus, 1255 Laird Blvd., Mount Royal, Que., consult. engr.

Ont., Toronto—APARTMENT—Belmont Constr. Co. Ltd., 246 Vaughan Rd., plans by George Jarosz, 1949 Eglinton Ave. W., apartment, 172 Jameson Ave. $700,000.

Ont., Toronto—SHOPPING CENTER—Belmont Constr. Co. Ltd., 246 Vaughan Rd., plans by George Jarosz, 1949 Eglinton Ave. W., concrete, rein.-con. frame, shopping centre, supermarket, 23,000 sq. ft. air-conditioned office, Springhurst Ave. $500,000.

▲ Ont., Sault Ste. Marie—HOSPITAL—Plummer Memorial Hospital, Queen St. E., plans by Rounthwaite & Fairfield, 93 Yorkville Ave., hospital wing addn. $1,000,000.

Ont., Sault Ste. Marie—UNION HALL—Union Steel Workers of America, Local 2251, 126 Thompson St., union hall, Denis St. $500,000.

▲ Ont., Toronto—OFFICE—State Rock Investments Ltd., 75 Eglinton Ave. E., 10 story, 87,000 sq. ft. office, southeast corner Younge St. and Davisville Ave. $1,500,000.

▲ Que., Beaconsfield—SHOPPING CENTRE—Ivanhoe Corp., 7101 Cote St. Luc, Montreal, plans by Eliasoph & Berkowitz, 4950 Queen Mary Rd., Montreal, 1 story, concrete, brick, concrete block shopping centre, Metropolitan Blvd. $2,000,000.

Que., Levis—SUPERMARKET, etc.—Steinberg's Ltd., 5400 Hochelaga St., Montreal, plans by Eliasoph & Berkowitz, 4950 Queen Mary Rd., Montreal, supermarket and shopping centre, $2,000,000.

Que., Montreal—OFFICE—550 Sherbrooke St. W. Corp., c/o Dr. Philip Joseph, 550 Sherbrooke St. W., plans by Greenspoon, Freedlander & Dunne, 4151 Sherbrooke St. W., 23 story, 108 x 140 ft. office addn. southeast corner Sherbrooke St. W. and Aylmer St. $5,000,000. Backler & Horvath, 5253 Decarie Blvd., consult. engrs.

Que., Montreal — HOSPITAL — Hospital Notre Dame d l'Esperance, c/o Duplessis, Labelle & Derome, archts., 6655 Cote des Neiges Rd., 165-bed hospital extensions, $500,000.

INDUSTRIAL BUILDINGS

▲ Ariz., Phoenix—FACTORY—Motorola, Inc., 4545 W. Augusta Blvd., Chicago, Ill., electronics factory. $3,000,000. Constr. in spring.

▲ Fla., Ocala—PLANT—Universal Sewer Pipe Co., division U. S. Concrete Pipe Co., Ocala, 270,000 sq. ft. mfg. plant. $2,500,000.

▲ Ind., Hammond—ELECTRIC GENERATING PLANT—Northern Indiana Public Service Co., 5265 Hohman St., electric generating plant, Burns Harbor Porter Co. on Lake Michigan, near here. $30,000,000. Sargent & Lundy, 140 South Dearborn St., Chicago, Ill., consult. engrs. CD 11/16.

Mass., Waltham—MANUFACTURING and RESEARCH—Ionics, Inc., 152 Sixth St., Cambridge, manufacturing and research bldg., Stony Brook Reservation, off Rte. 128. $800,000. Constr. 1960.

▲ Mo., Bridgeton — PLANT — Pillsbury Co., Pillsbury Bldg., Minneapolis, Minn., grocery products and food processing plant, Wabash R.R. tracks. $4,000,000-$5,000,000, with equipment. Constr. in summer 1960.

▲ N. J., Flemington—WAREHOUSE—L. & C. Mayers, 516 W. 34 St., New York, N. Y., warehouse, Reaville Rd., $2,000,000.

▲ O., Youngstown—PLANT—Republic Steel Corp., Republic Bldg., Cleveland, Zone 15, plastic-coated steel pipe facilities expansion, Youngstown plant, $2,000,-000.

▲ Pa., Pottstown—PLANT—National Lead Co., industrial plant addns., alterations. $2,000,000.

▲ South Dakota—HYDRO-ELECTRIC PLANT—East River Electric Co-operative, Madison, hydro-electric plant, Mobridge. $11,800,000. R. W. Beck & Assocs., Columbus Bank Bldg., Columbus, Neb., consult. engrs.

▲ Tex., Beaumont—FILTRATION PLANT—Texas Gulf Sulphur Co., c/o Houston Club Bldg., Sulphur Filtration Plant, at Spindletop, $1,000,000.

▲ Tex., Dallas—INDUSTRY CENTER—Edward C. Peterson, 4540 Lorraine Ave., and Bright & Schiff, c/o Mercantile Commerce Bldg., plans by Geo. L. Dahl, 2101 N. St. Paul St., Industry Center, incl. office-exhibit bldg., $2,500,000; underground parking garage, $225,000; above-ground hard-paved auto center, $115,000. CD 2/2.

▲ Tex., El Paso—PLANT—El Paso Natural Gas Co., El Paso Natural Gas Co. Bldg., gasoline plant, $1,000,-000; dehydration plant, $605,000; plant office, $600,-000. CD 10/9/56.

▲ Tex., Hillsboro—PLANT—Keasbey-Mattison Co., 1954 Butler Ave., Ambler, Pa., asphalt, asbestos and heat-insulating mfg. plant, $4,350,000; plant area and auto center hard-type paving, $110,000; water system, $60,000; site area earthwork, incl. grading, filling, leveling, drainage, $75,000, 50 acre industrial site, off Hy. 77.

▲ Tex., Houston — BREWERY, etc. — Anheuser-Busch, Inc., 721 Pestalozi St., St. Louis, Mo., brewery, $22,000,000; maintenance shop, $200,000; brewery area and auto center hard-paving, $175,000; water sys., $75,000; outside lighting sys., $95,000; 50-acre area earthwork, grading, drainage, etc., $80,000, off Pt. Arthur Freeway.

Tex., Houston—PARKING GARAGE—Pappas Refrigeration Co., Louisiana and Preston Sts., plans by Paul & Paul, 401 Louisiana St., rein.-con. fdn., brick, 250-car split-level parking garage, at Louisiana and Preston Sts. $500,000. Vogt & Clouse, 2712 Danvale St., and Jas. H. Howard & Associates, 4101 San Jacinto St., consult. engrs.

▲ Tex., Houston—PLANT—River Brand Rice Mills, Inc., 1702 Taylor St., 60,000 sq. ft. plant, incl. packaging-warehouse and thirty-seven 80 ft. high concrete silos. $1,250,000.

▲ Va., Williamsburg—PLANT—Dow Chemical Co., 1000 Main St., Midland, Mich., nylon plant. $7,000,000-$10,000,000. Constr. 1960.

▲ Que., Montreal—BREWERY—John Labatt Ltd., 50 Labatt Ave., La Salle, brewery extensions. $1,300,-000. T. Pringle & Son, Ltd., 4795 St. Catherine St. W., consult. engrs.

UNCLASSIFIED

▲ Colo., Denver—PARK ZOO—City & County of Denver, City and County Bldg., city park zoo expansion. $1,000,000. Robert Everly, 874 Green Bay Rd., Winnetka, Ill., consult. engr. CD 5/23/55.

Indiana—SUB-STATIONS, etc.—Rural Electric Membership Corp. of Whitley Co., Columbia City, 3 substations, Richland, Cleveland, and Perry Twps., 20 mi. new distr. lines, garage and warehouse, $624,000. CD 9/15/47.

▲ Massachusetts—BREAKHART RESERVATION IMPRVS.—Commonwealth of Mass., Metropolitan Dist. Comn., Parks Div., 20 Somerset St., Boston, imprvs. at Breakhart Reservation, incl. beach, bathhouses, roads, etc., Saugus. $1,500,000. Constr. 1960.

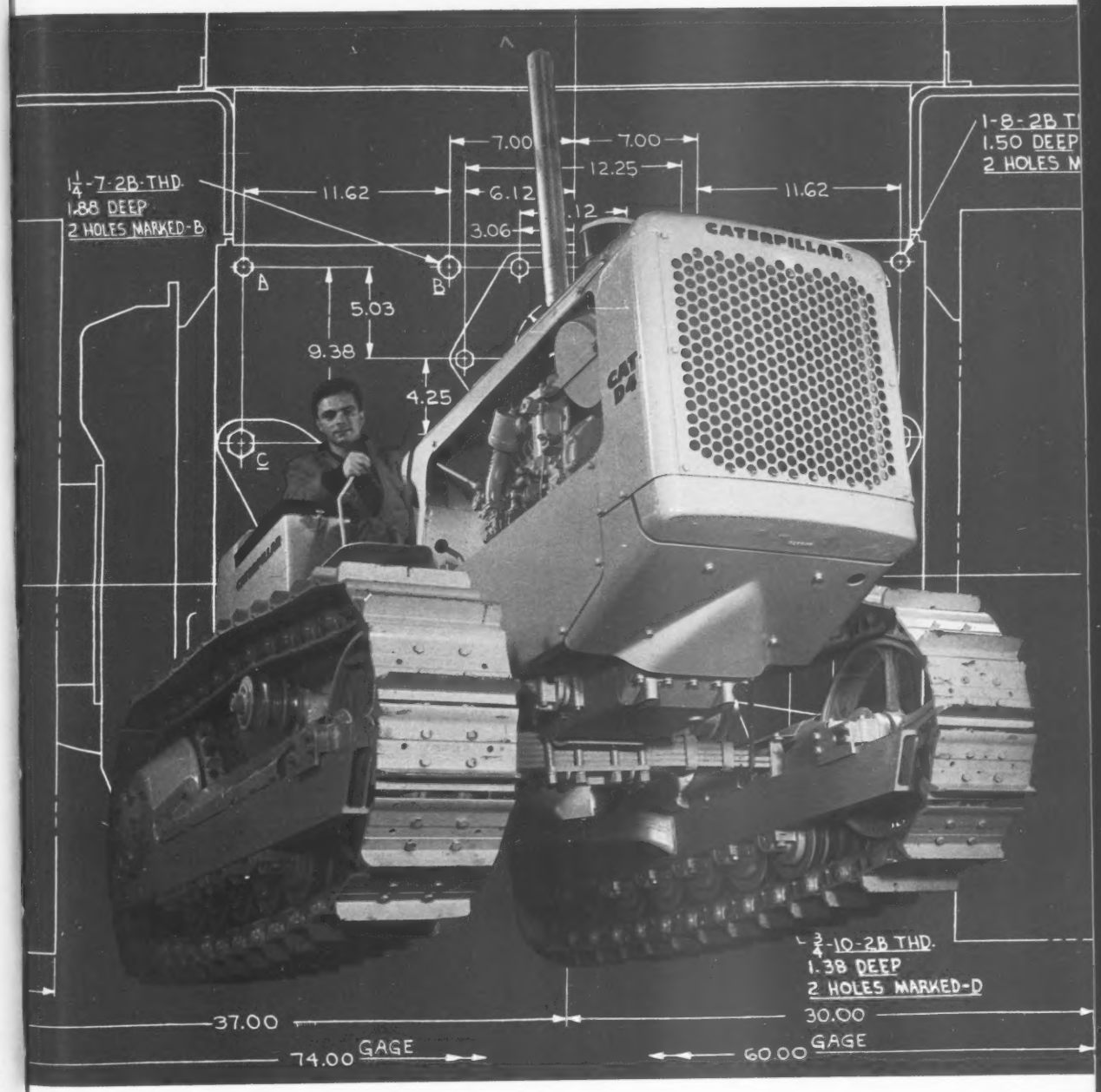
South Carolina — TELEPHONE LINES — West Carolina Rural Telephone Coop., Abbeville, telephone lines, Abbeville Co. $500,000.

▲ Tex., Brownsville — TRANSMISSION LINES—City, City Hall, electric transmission lines, $1,000,000. Black & Veatch, 1500 W. Meadow Lake Parkway, P. O. Box 8405, Kansas City, Mo., consult.-engrs. CD 10/30/56.

▲† Wash., Seattle—FEDERAL SCIENCE—Public Bldgs. Service, Federal Office Bldg., Seattle, Zone 4, plans by M. Yamasaki, 1025 E. Maple St., Birmingham, Mich., and Naramore, Bain, Brady & Johanson, 904 7 Ave., Seattle, federal science bldg. at Century 21 Exposition. $3,500,000. Constr. this year. (Correction—architects). CD 1/29.

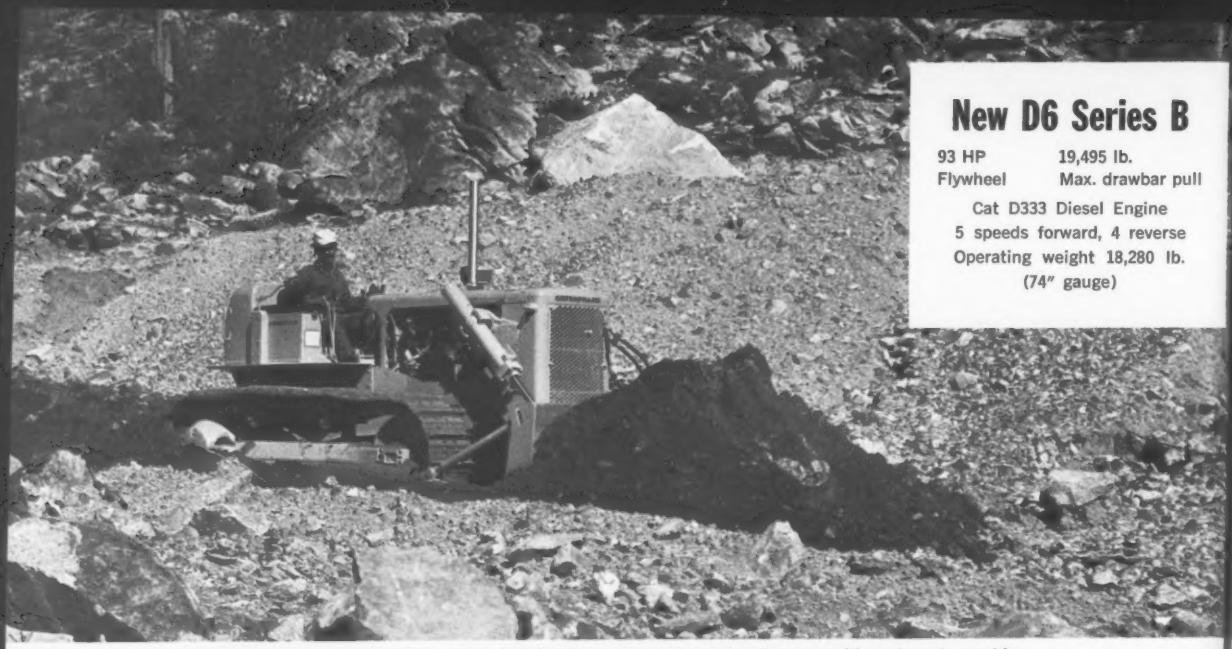
CATERPILLAR ANNOUNCES

2 NEW TRACTORS



D4 Series C · D6 Series B

completely redesigned to boost production and lower costs

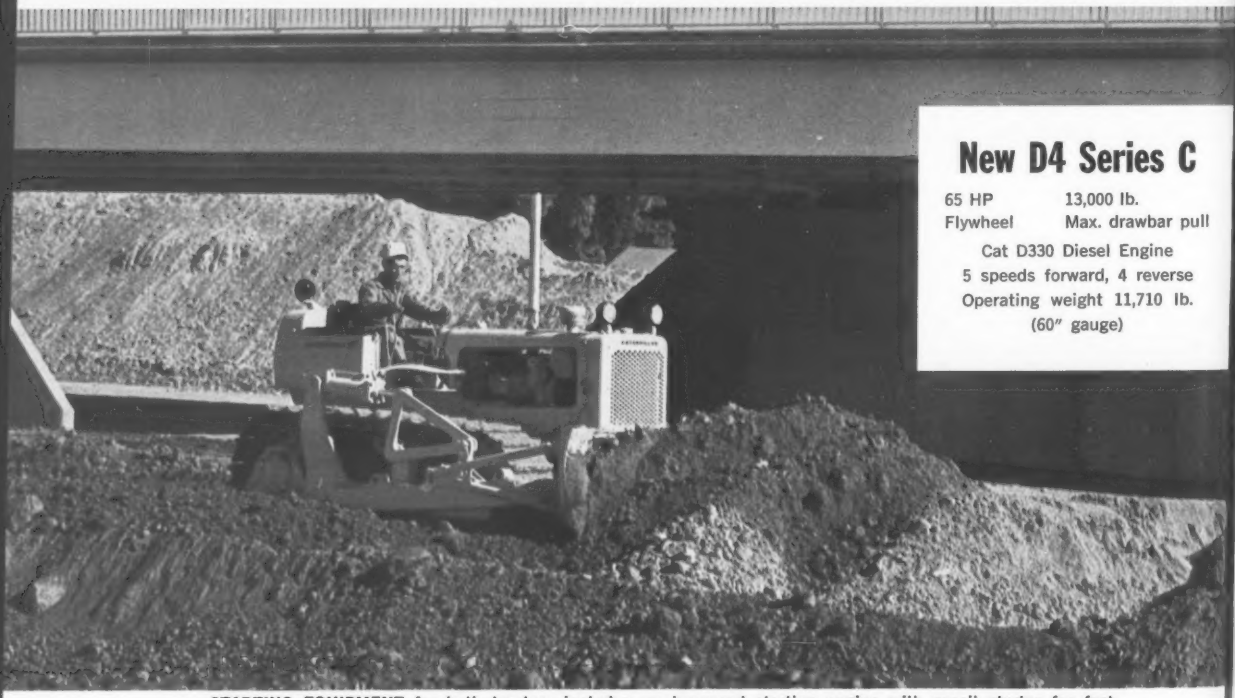


New D6 Series B

93 HP Flywheel — 19,495 lb. Max. drawbar pull

Cat D333 Diesel Engine
5 speeds forward, 4 reverse
Operating weight 18,280 lb.
(74″ gauge)

ATTACHMENTS for the D6 and D4, individually designed to match the capacities of each machine, include Bulldozers, Tool Bar, Rock Rakes, Winches, K/G Blade, Back Rippers and many others.



New D4 Series C

65 HP Flywheel — 13,000 lb. Max. drawbar pull

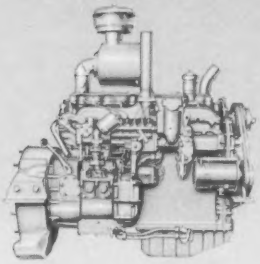
Cat D330 Diesel Engine
5 speeds forward, 4 reverse
Operating weight 11,710 lb.
(60″ gauge)

STARTING EQUIPMENT for both tractors includes an improved starting engine with recoil starter for fast starts. 12-volt in-seat starting for starting engine available. 24-volt direct electric starting for diesel optional.

NEW D6 Series B and D4 Series C Tractors...

They look different—they are different. Look them over and see for yourself the advances Caterpillar has built into the new work-styled D6 Series B and new D4 Series C Tractors. Each, in its own class, answers your need for new high production, new operating

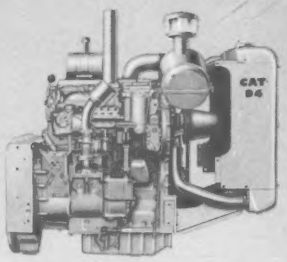
New compact Caterpillar Diesel Engines deliver 25% more lugging ability



D6 powered by 93 HP 6-cylinder Engine

Maximum drawbar pull, 19,495 lb. Provides power with dependability built in for a long life of economical, efficient operation.

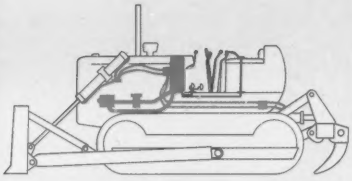
Here's power for even bigger jobs for the D6 and the D4—two completely new Cat Diesel Engines. Each is specifically designed for the tractor it serves. Yet each has certain basic characteristics in common. For example: 25% more lugging ability . . . new compactness, with new ruggedness . . . famous Cat fuel injection pumps in new, easily serviceable housings . . . the reliable Cat precombustion chamber design that delivers maximum horsepower on heavy, economy-type fuels . . . a new direct-acting governor that makes quick fuel adjustments, picks up loads fast . . . a new improved gasoline starting engine with recoil starter for fast starts in any weather—many others!



D4 powered by 65 HP 4-cylinder Engine

Maximum drawbar pull, 13,000 lb. New design results in a smooth, vibration-free performance through all speed ranges.

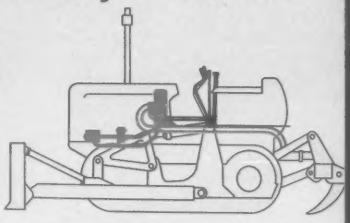
New integral hydraulic systems put more power where you need it



D6 Integral Hydraulic System

No. 165 Hydraulic Control for Bulldozer, 54 GPM – 1500 PSI
No. 143 Hydraulic Control for No. 6 Tool Bar, 29 GPM – 1700 PSI

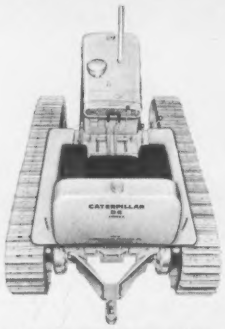
More work power at the tools—you'll find that's one of the big advantages of these new Cat hydraulic systems. Under-the-hood mounting of tank, pump and valves permits convenient routing of hydraulic lines to bulldozer or implement cylinders, frees front and rear end for optional equipment. Center-pivoted cylinder mounting on the D6 gives increased blade lift/drop range for increased production. Hydraulic control system provides hand control for bulldozer and/or ripper, foot control for tilt cylinder. A choice of three hydraulic circuits gives you complete flexibility to meet all needs. You also have a wide choice of tools to make both tractors even bigger earners.



D4 Integral Hydraulic System

No. 143 Hydraulic Control with:
29 GPM Pump – 1700 PSI for Bulldozers
17 GPM Pump – 1700 PSI for Tool Bars

New operator convenience and comfort in co-ordinated compartments



D6 operator's compartment

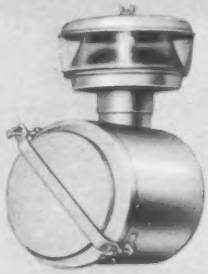
Look what's happened to the operator's compartments in the D6 and D4! Both are all new and completely restyled. The controls are co-ordinated to make one motion flow into the next one. They reduce hand movements and speed every operation. The forward-reverse lever is located next to the operator's right hand to quicken 'dozer cycle times. The transmission speed selector is only inches away. The governor control is high and clear, extending from the new streamlined, quick-vision dash. Boosters for steering clutches provide muscle-saving operation. And the comfortable, high-placed seat allows full view of tools for faster, more accurate work.

D4 operator's compartment

better than ever with new work-producing features!

economy and new earning capacity. Each is completely redesigned to lick the tough challenge of today's fast-paced jobs. Some of their new features are described here. Notice how they complement performance-tested features to make these modern, heavy-duty rigs better than ever. See your Caterpillar Dealer for complete facts about them and their matching equipment. He'll gladly demonstrate on your job.

More features that put the new D6 and new D4 out front in production and economy!

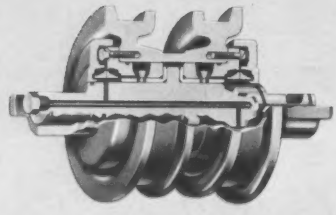


Dry-type air cleaner

Most efficient air cleaner ever developed. Removes 99.8% of all dirt from intake air during every service hour, even in the dustiest conditions. Can be serviced in five minutes. Cuts maintenance time (by as much as 75%) and eliminates all oil costs. This modern-design oil cleaner is new in both the D6 and D4.

Hydraulic track adjusters

Another on-the-job timesaver developed by Caterpillar. An ordinary grease gun is all that's needed to assure proper track tension. Just open the inspection door and apply a few strokes. The hydraulic cylinder does the rest automatically. Job-tested, hydraulic track adjusters are optional on both the D6 and D4.

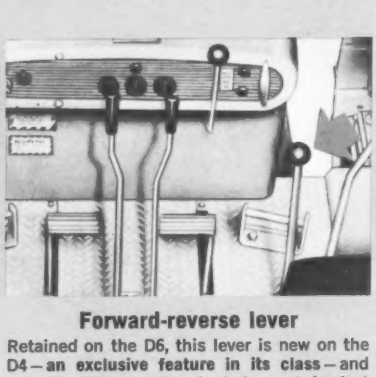


Lifetime lubricated track rollers

That's right – lifetime! Proved by more than five years' testing. Exclusive floating ring seals protect rollers and idlers – keep oil in, dirt out. No lubrication or greasing at all required until rebuilding. Help you roll up profits instead of repair bills. This long-life feature is new in both the D6 and D4.

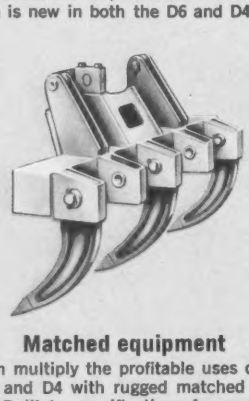
Oil clutch

The most advanced clutch design in the industry – a Caterpillar exclusive. Provides up to 2,000 hours' service without adjustment, the equivalent of about 13 months' "adjustment-free" operation. Virtually eliminates down time for clutch repair. Retained on the D6. Optional on the D4.



Forward-reverse lever

Retained on the D6, this lever is new on the D4 – **an exclusive feature in its class** – and puts the D4 way ahead of the rest in fast 'dozing cycles. Next to the operator's right hand, and only inches away from the transmission speed selector, it lets you change direction quickly and easily.



Matched equipment

You can multiply the profitable uses of both the D6 and D4 with rugged matched equipment. Built to specifications for each tractor, there are Straight and Angling Bulldozers, Rippers, Tool Bars, Rock Rakes, Winches, Bulldozer-mounted Back Rippers, K/G Blades and other tools. Hydraulic or Cable Controls.

ARE YOU GETTING ALL THE PROFIT?

Now is the time to take careful stock of your equipment —to make sure it's earning you all the profit to which you are entitled. All too often, profits slip away because a tractor that appears to be paying its way is actually not delivering the way it should.

A veteran tractor, for example, may be holding down a key job. Repair costs are low. On the face of it, the tractor seems to return a decent profit. But in reality—that tractor could be losing as much as it earns.

Machines have improved a lot in recent years—and Caterpillar has set the pace all along the line. Consider the new D6 Series B and new D4 Series C Tractors. In terms of work, both of these rugged units can do a lot more—not only mechanically—but from the standpoint of greatly increased operator efficiency. A comparison of your existing equipment with these work-styled machines might easily prove a new tractor would increase your output and profits far more than you imagine.

Ask your Caterpillar Dealer to demonstrate the giant strides represented by these two new tractors. Investigate the complete line of attachments that double and triple their usefulness to you. See for yourself how the new D6 and new D4 can help you earn *all* the profit you should on your jobs!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

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DIESEL ENGINES • TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

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PROVED IN THE FIELD

CONSTRUCTION REPORTS

Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—LB & CA

▲† **M. A. Gammino Constr. Co.**, 728 Valley St., Providence, R. I., CA **$3,790,000**, est. over $1,000,000, breakwater, U.S. Naval Base, NBy 24924, Spec. 24924/59, NEWPORT, R. I. Dist. P. Wks. Office, 495 Summer St., Boston, Mass. Bids Jan. 21. CD 1/25, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **New York and New Jersey**—BA 3/8—Port of New York Authority, 111 Eighth Ave., New York 11, N. Y., Fort Lee parking area for lower level expansion of George Washington Bridge in area bounded by New South Marginal St., Lemoine Ave., Main St. and Center Ave., Fort Lee Boro, N. J., Contr. GWB-190.030. Plans deposit $30. CD 8/15/57.

BUILDINGS—BA

▲ **Pa., Langhorne**—PLANT, etc.—BA 3/1—George M. Ewing Co., archt., Western Saving Fund Bldg., Phila., 1 story, 32,000 sq. ft. masonry mfg. plant and office for Strick Trailer Co., Whitaker and Godfrey Aves., Phila. $3,000,000.

BUILDINGS—SLC

▲ **N. Y., Olean**—FRIARY—St. Bonaventure University, Olean, soon lets contract friary. $2,000,000. CD 8/26/58.

HEAVY CONSTRUCTION—LB & CA

▲ **John F. Casey**, P.O. Box 1888, Pittsburgh, Pa., LB **$2,498,518** (12 bidders), Washington Channel Bridge substructure and grading, WASH., D. C. D. C. Govt., Dpt. Highways, 499 Pa. Ave. N.W., Wash., D. C. Bids Feb. 10. CD 2/4.

BUILDINGS—LB & CA

▲ **Leon D. DeMatteis Constr. Co.**, 827 Elmont Rd., Elmont, N. Y., LB **$2,850,000**, (13 bidders), general contract ACADEMIC BLDG., Queens College, FLUSHING, N. Y. Bd. of Higher Educ., Queens College Business Office, Bldg. H, Rm. 204, 65-30 Kissena Blvd., Flushing 67, N. Y. Bids Feb. 9. CD 2/1;
A. F. Smith Electrical Contractors, Inc., 1518 East New York Ave., Brooklyn 12, N. Y., LB **$578,880**, (12 bidders), electrical work for Academic Bldg., Queens College (Flushing, N. Y.).

▲ **McCloskey & Co.**, 1620 W. Thompson St., Phila., Pa., CA **$4,500,000**, TERMINAL BLDG., SHOPPING CENTER, PARKING GARAGE, BUS TERMINAL and STORES, UPPER DARBY, PA. Phila. Suburban Transportation Co., 69 St. Terminal, Upper Darby, Pa. Thalheimer & Weitz, 1325 Walnut St., Phila., Pa., archts. CD 12/17.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲† **S. J. Groves & Sons**, 500 Wesley Temple Bldg., Minneapolis, Minn., LB Alternate 1, **$4,295,780** (9 bidders), first section access road, Dulles International Airport, CHANTILLY, VA. Federal Aviation Agency, 16 and Constitution Ave. N.W., Wash., D. C. Bids Feb. 10. CD 2/10;
C. J. Langenfelder & Sons, Inc., 8427 Pulaski Highway, Baltimore, Md., LB Alternate 2, **$3,941,536**, first section access road, Dulles International Airport (Chantilly, Va.).

▲ **NORTH CAROLINA**—State Hy. Comn., Raleigh,
T. A. Loving & Co., Wachovia Bank Bldg., Goldsboro, N. C., CA **$2,848,758**, bridge over Alligator River, Proj. 8.11907, Tyrell and Dare Counties. Bids Feb. 2, awarded Feb. 8. CD 2/5, under LB.

BUILDINGS—LB & CA

▲ **T. A. Loving Co.**, Wachovia Bldg., Goldsboro, N. C., CA **$1,896,064**, CHEMISTRY LABORATORY, PHYSICS and ELECTRICAL ENGINEER FACILITY, North Carolina State College, RALEIGH, N. C. State of North Carolina, Capitol Bldg., Raleigh, N. C. CD 12/24.

MIDDLE WEST

BUILDINGS—BA

▲ **O., Cincinnati**—HOUSING—BA 3/3—Cincinnati Metropolitan Housing Authority, 595 Armory St., 292 unit Winton Terrace housing. $3,800,000. CD 4/29.

HEAVY CONSTRUCTION—LB & CA

▲ **Great Lakes Dredge & Dock Co.**, 1630 Williamson Bldg., Cleveland, O., LB **$2,473,080**, dredging Fighting Island Channel, Detroit River, IFB CIVENG-20-064-60-34, MICHIGAN and ONTARIO. U. S. Eng., 1101 Washington Blvd., Detroit 31, Mich. Bids Feb. 4. CD 1/18.

BUILDINGS—LB & CA

▲ **Joseph Skilken & Co.**, 383 S. 3 St., Columbus, O., CA Est. **$4,250,000**, 300,000 sq. ft. McKinley Town and Country SHOPPING CENTER, SOUTH BEND, IND. Casto Organization, 42 S. 4 St., Columbus, O., and Joseph Skilken & Co., 383 S. 3 St., Columbus, O.

(Continued on page 137)

To meet ALL your requirements for

Concrete Forming

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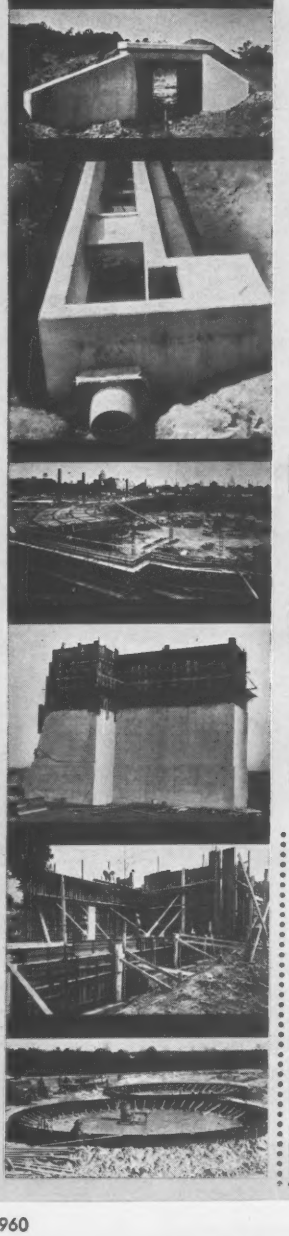
Typical jobs using EFCO ECONOMY FORMS



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Versatile:

Adaptable to a wide range of projects including:

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- Water and Sewage Plants
- Sidewalks
- Culverts
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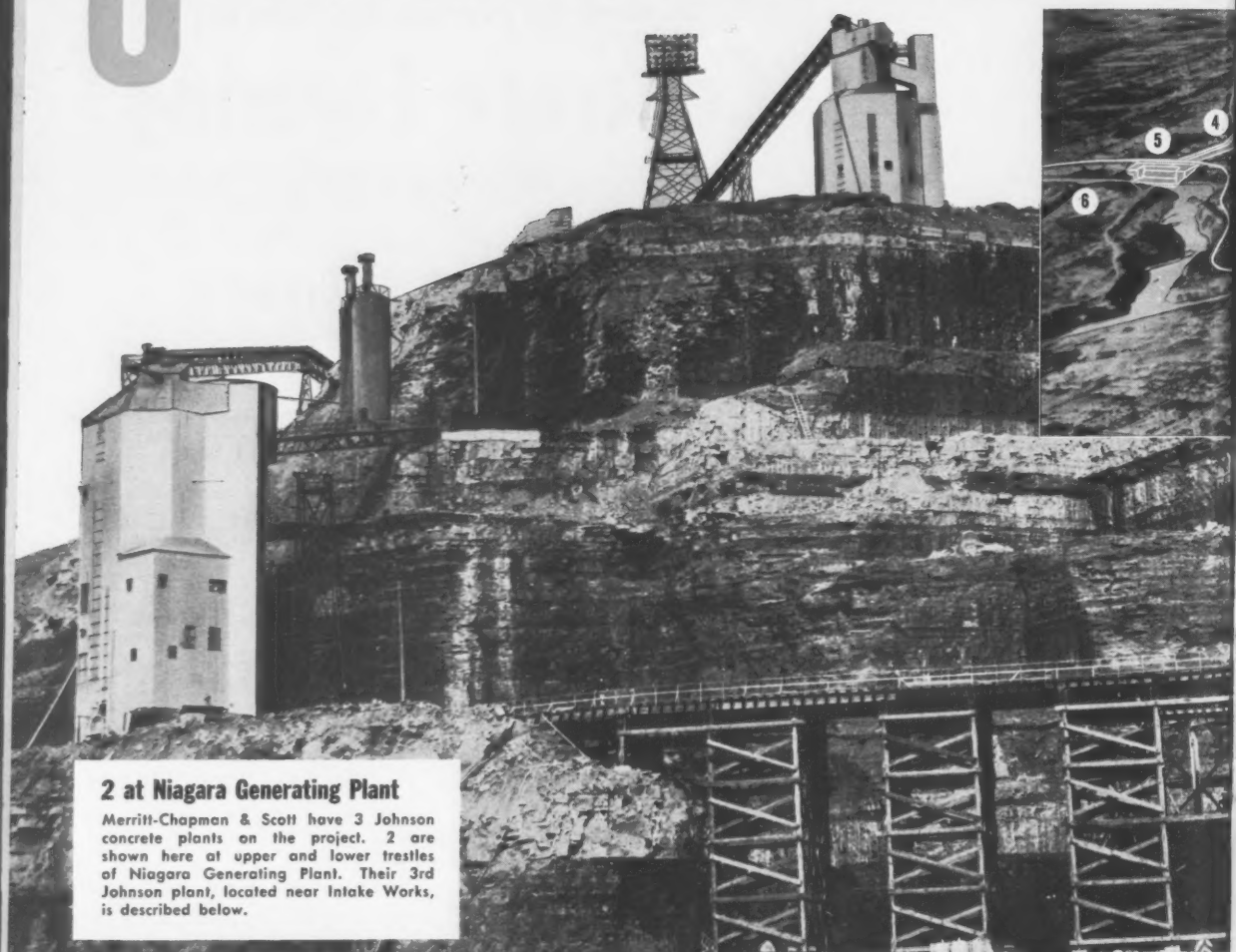
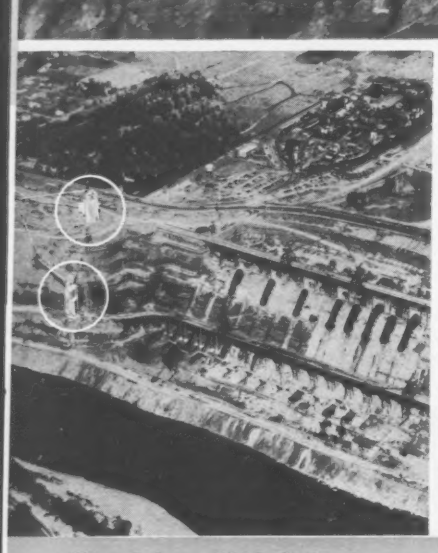
6 Johnson plants pour concrete on $7



2 at Niagara Generating Plant

Merritt-Chapman & Scott have 3 Johnson concrete plants on the project. 2 are shown here at upper and lower trestles of Niagara Generating Plant. Their 3rd Johnson plant, located near Intake Works, is described below.

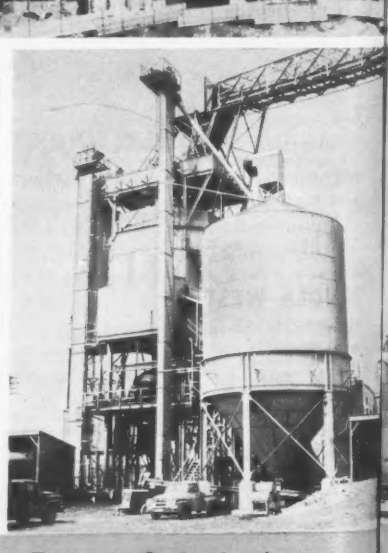


Viewed from 4000 feet up

Aerial photo shows work in progress on Niagara Generating Plant, with 2 Johnson plants at extreme left. When completed, project will produce approx. 2 million KW of electric power. Photo Courtesy of Power

Merritt-Chapman & Scott's

3rd Johnson plant, a 400-yard Octo-Bin, with four 2-yard mixers, feeds concrete for structures at the Intake Works on Niagara River above the upper rapids, and for a mile of twin conduits.



Tuscarora Contractors*

have the contract on pump generating plant at Tuscarora Reservoir. Theirs is a fully-automatic 400-yard Johnson Octo-Bin, with four 2-yd. mixers discharging directly into concrete buckets which are shuttled in

on $720 million Niagara Power Project

PROJECT HIGHLIGHTS: Panoramic view (from Canadian side) identifies major structures: (1) Intake Works, where water is diverted from the Niagara River above the upper rapids. (2) Dual water conduits, each 46 feet wide, 66 feet high, about 4 miles long, under city of Niagara Falls, N.Y., towns of Niagara and Lewiston. (3) Tuscarora Reservoir, covering approx. 1400-acre area. (4) Tuscarora Pump-Generating Plant. (5) The Niagara Generating Plant at Lewiston, N.Y., where the diverted water is emptied back into the river below the lower rapids. Project takes maximum advantage of a 325-foot drop in elevation along this 7-mile stretch of river. Also will preserve longer, the beauty of the famous Horseshoe Falls, and American Falls, by reducing volume of water that surges over them. (6) Sir Adam Beck Generating Station is located downstream, on the Canadian side.

Construction history is being made on the $720 million Niagara Power Project under development by the Power Authority of the State of New York. First power is set for February 10, 1961 — just 3 years from the time first contract was awarded, and work is rapidly moving along on schedule. A remarkable achievement, considering record yardages involved. Over 1.7 million cubic yards of concrete are going into construction of the two generating plants, alone!

A large share of credit for construction progress goes to these contracting firms: Merritt-Chapman & Scott Corporation, Gull-Defelice, Tuscarora Contractors*, and Balf-Savin-Winkelman. It's interesting to note that all are using C. S. Johnson plants for high production of rigid-specification concrete. There's a very good reason for this: *experience!* Ever since the days of TVA, Grand Coulee, Hoover Dam, builders of large-scale concrete construction jobs have relied on Johnson® plants. This long-time experience and leadership in the field of big-volume concrete production are your assurance of efficient operation, high-quality engineer-approved concrete, and lowest cost-per-yard on every job — no matter how large or small. Read all about it in technical 44-page catalog "Suggestions for Planning Concrete Plants". Ask your local Johnson distributor for your free copy, or write to:

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(A Division of Koehring Company)
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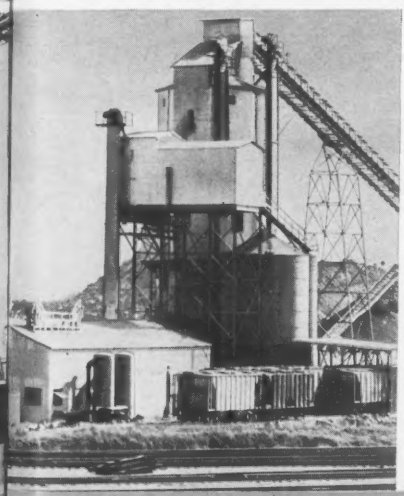
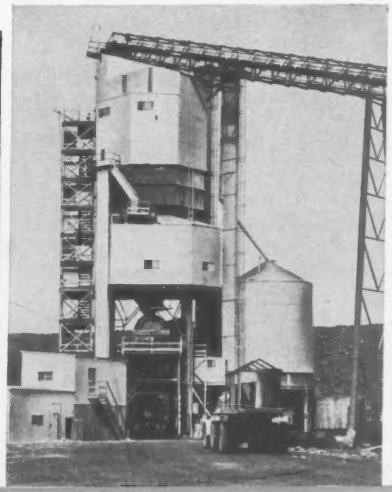
*THE ARUNDEL CORPORATION, L. E. DIXON CO., HUNKIN-CONKEY CONSTRUCTION CO.

J10



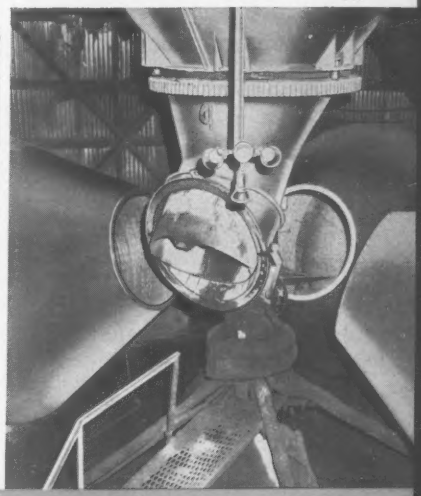
Balf-Savin-Winkelman

are speeding construction on 9,000-foot section of the 4-mile covered dual conduit system, carrying water from Intake Works to Tuscarora pumping plant. Here's their Johnson 500-yard concrete plant, equipped with four 4-yd. mixers.



Gull-Defelice

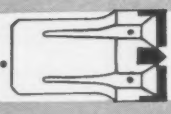
produce all concrete for their 5,500-foot section of conduit work in this 500-yard Johnson Octo-Bin plant — making it 100% Johnson on the conduit section! This plant has 3 Koehring-Johnson 4-yard heavy construction mixers.



100% Koehring-Johnson Mixers —

All 6 Johnson plants on the Niagara Power Project are equipped with Koehring-Johnson heavy construction mixers — a total of 23! Here are 4-yard heavy construction tilting mixers in Merritt-Chapman & Scott's upper Lewiston plant.

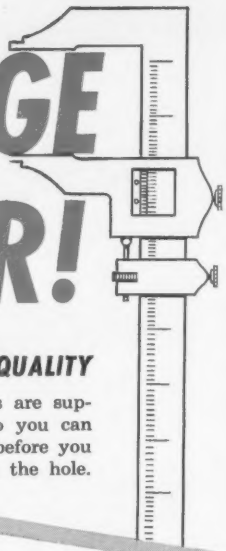
BIGGEST DRILLING NEWS IN AGES...



V-R

New V-R percussion bits

HOLD GAUGE LONGER!



for Bottoming Drive Rods

for Shoulder Drive Rods

for Push-on Rods

YOU CAN SEE THE QUALITY

V-R Percussion Bits are supplied unpainted so you can see the quality before you put the bit in the hole.

NEW...

CARBIDES . . . greater impact and abrasion resistance . . . the result of 30 years of carbide experience.

BODIES . . . exclusive fatigue resisting alloy steel, controlled heat treating and precision machined threads prevent ring-off and bit loss.

ENGINEERING . . . every bit is especially engineered for faster penetration, longer life and holding gauge longer on tough drilling jobs.

MANUFACTURING . . . V-R manufactures complete bits . . . including the manufacture of the carbide from the ore to the finished product . . . your assurance of consistent quality.

Carbide specially engineered for percussion drilling is the reason why new V-R Percussion bits hold gauge longer. 30 years of V-R carbide research and manufacturing experience have enabled V-R to develop this new standard of drilling performance.

Leading contractors, construction engineers and mining engineers have given their complete cooperation in the most exhaustive on-the-job field testing program in drilling history. These tests prove that new V-R Percussion Bits will hold gauge longer, penetrate faster and give more footage per bit on any drilling job.

Now these fast, rugged bits are ready to go to work for you. Contact your nearest V-R representative or write for complete information.

CREATING THE METALS THAT SHAPE THE FUTURE

V-R VASCOLOY-RAMET

804 MARKET STREET • WAUKEGAN, ILLINOIS

M-767

(Continued from page 133)

▲ **Robin Constr. Co.,** 1333 N. Wells St., Chicago, Ill., CA Est. **$35,000,000,** six 27 story APARTMENTS, 4200 block Marine Dr., CHICAGO, ILL. Albert A. Robin, c/o contractor. L. R. Solomon and J. P. Cordwell & Associate, 61 Superior St., Chicago, Ill., archts.

MISSISSIPPI TO ROCKIES

BUILDINGS—BA

▲ **Tex., Houston**—OFFICE, etc.—Bids Asked—L. & R. Building Co., Century Bldg., 13 story glass, masonry, brick office, "2100 Travis Street Building", $2,500,000; 500-auto parking garage, $300,000. Lloyd & Morgan, 4605 Montrose Blvd., engrs. CD 12/23.

HEAVY CONSTRUCTION—LB & CA

▲† **H. B. Zachary Co.,** W. Harding Blvd., San Antonio, Tex., LB **$6,714,902,** relocate US Hy. 69 and M. K. & T. Ry. lines, Eufaula Reservoir, Canadian River, ENG-34-066-60-54, OKLAHOMA, U. S. Eng., Box. 61, Tulsa, Okla. Bids Feb. 4. CD 12/31.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **Alaska**—COMMUNICATIONS FACILITIES—BA 3/8—U.S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash., communications facilities at Duncan Canal and Smugglers Cove Air Force Station. CD 12/7, under Unclassified and at Ketchikan Air Force Station, Inv. 60-29. Over $4,600,000.

HEAVY CONSTRUCTION—LB & CA

▲† **Raber-Kief, Inc.,** 5939 4th Ave. S., Seattle, Wash., LB **$2,420,129,** est. $2,279,225 (4 bidders), air defense facilities, Mountain Home Air Force Base, ENG-45-164-60-22, MOUNTAIN HOME, IDAHO. U.S. Eng., City-County Airport, Walla Walla, Wash. Bids Feb. 9. CD 1/22.

▲ **WASHINGTON and OREGON**—State Hy. Comn., Dpt. Hys., Olympia, Wash., Bids opened 2/9, **Paul Jarvis, Inc.,** 1070 West Ewing, Seattle, Wash., LB **$2,409,163** (3 bidders), bridge over Columbia River at Biggs Rapids, Klickitat Co., Wash., and Sherman Co., Ore. CD 1/8.

▲ **N. P. Van Valkenburgh Co. Inc.** and **Gunther & Shirley Co.,** 1627 North Chico Ave., El Monte, Calif., LB **$1,743,360,** (13 bidders), Whale Rock Conduit between Whale Rock Dam at Cayucos and San Luis Obispo, San Luis Obispo Co., Spec. 59-15, CALIFORNIA. State Dpt. Water Resources, 1120 N St., Sacramento, Calif. Bids Feb. 10. CD 1/7.

▲† **Baldwin Contg. Co.,** P.O. Box 311, Marysville, Calif., LB **$7,145,258** (6 bidders) Group Hangars Nos. 2, 3 and 4 incl. utilities and paving (Part S) Naval Air Station, NBy-25181, LEMOORE, CALIF. Dist. P. Wks. Office, 12th Naval Dist., Rm. C112, San Bruno, Calif. Bids Feb. 3. CD 1/26.

BUILDINGS—LB & CA

▲ **R. A. Watt Constr. Co.,** 16901 S. Western Ave., Gardena, Calif., CA **$1,750,000,** 142 frame, stucco DWELLINGS, ARTESIA, CALIF. St. Malo Land Co., Hopland Land Co. and Southland Bldg. Co., 16910 S. Western Ave., Gardena, Calif.

▲ **Los Altos Development Co.,** 5512 Britton Dr., Long Beach, Calif., CA **$2,184,450,** 232 frame, stucco DWELLINGS, Los Padres Dr., Mescal St., S. Sierra Leone Ave., Bellorita St., Villa Clara St., Tract 25271, LA PUENTE, CALIF. Bel State Sixth, Inc., 5512 Britton Dr., Long Beach, Calif.

▲ **Morley Constr. Co.,** 7700 Sunset Blvd., Los Angeles, Calif., LB **$3,894,000,** (9 bidders), Los Angeles CITY COLLEGE addn., LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Feb. 9. CD 1/26.

▲ **Campbell Constr. Co.,** 800 R St., Sacramento, Calif., LB **$1,964,450,** (7 bidders), Will C. Wood JUNIOR HIGH SCHOOL, Lemonhill Ave., east of Stockton Blvd., SACRAMENTO, CALIF. Sacramento City Unified School Dist., 1619 N St., Sacramento, Calif. Bids Feb. 8. CD 1/14.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **Foundation Co. of Quebec Ltd.,** 1900 Sherbrooke St. W., Montreal, Que., CA **$3,736,859,** superstructure of loading and fingers and aeroquay, heating, plumbing, ventilating, air-conditioning, electrical work Montreal Airport, Dorval, MONTREAL, QUE. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids Jan. 28, awarded Feb. 5. CD 2/2.

BUILDINGS—LB & CA

▲ **Poole-Pritchard Canadian Ltd.,** 2404 2a St. S.E., Calgary, Alta., CA Est. **$12,500,000,** GAS PROCESSING PLANT, Dick Lake Gas Field, RIMBLEY, ALTA. British American Oil Co. Ltd. & Assocs., 800 Bay St., Toronto, Ont. CD 2/10.

▲ **Gateway Development Co., Ltd.,** 211 Syndicate Ave. S., Fort William, Ont., Owner Builds, **$6,000,000,** SHOPPING CENTRE and HOUSING DEVELOPMENT, McIntire Twp., PORT ARTHUR, ONT.

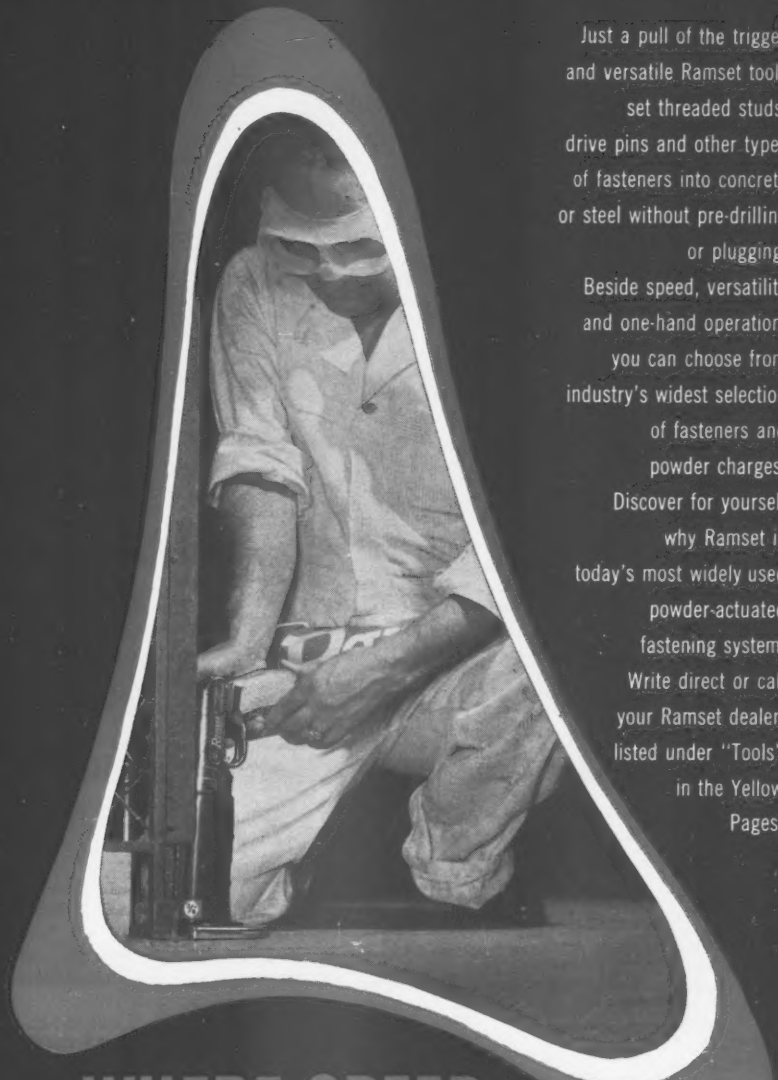
PUERTO RICO

BUILDINGS—LB & CA

† **U. S. Eng.,** Box 4970, Jacksonville 1, Fla., U.S.A., rejected bids Feb. 2, Capehart HOUSING, ENG-08-123-60-38, FORT ALLEN (formerly Camp Losey), PUERTO RICO. LB **$2,614,359.** CD 2/9, under LB.

(Proposal Advertisements see pp. 151 to 153)

leading contractors use **Ramset**



Just a pull of the trigger and versatile Ramset tools set threaded studs, drive pins and other types of fasteners into concrete or steel without pre-drilling or plugging. Beside speed, versatility and one-hand operation, you can choose from industry's widest selection of fasteners and powder charges. Discover for yourself why Ramset is today's most widely used powder-actuated fastening system. Write direct or call your Ramset dealer, listed under "Tools" in the Yellow Pages.

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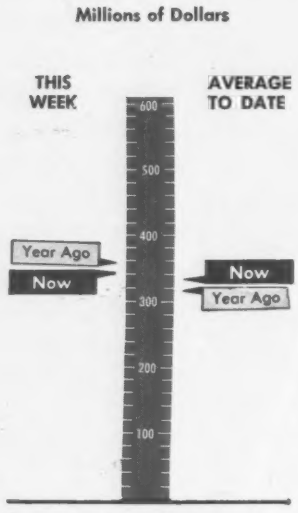
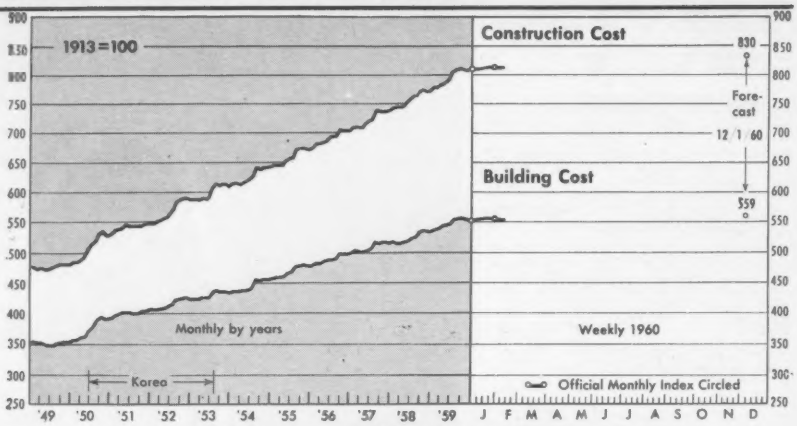
Construction Scoreboard

Contracts...





AMOUNT OF CONTRACTS LET

	This Week	Cum. 7 wks* 1960	Chge '59-'60 %
	millions		
All Heavy Constr....	$342.2	$2,359.5	+ 4
By Ownership			
PRIVATE	180.5	1,247.8	+19
PUBLIC	161.7	1,111.7	− 9
State & Municipal..	108.5	833.1	− 3
Federal	53.2	278.6	−24
By Type of Work			
PUBLIC			
Waterworks	4.6	35.4	−31
Sewerage	10.0	82.7	+15
Bridges*	13.5	88.5	+ 3
Highways	39.7	322.2	− 3
Earthworks, Dams & Waterways	9.0	96.4	+34
Buildings:			
Excl. Housing	33.5	226.3	−31
Housing	4.7	81.2	+28
Unclassified	46.6	180.2	−19
PRIVATE			
Buildings:			
Mass Housing.....	112.8	555.7	+19
Commercial	29.5	258.4	− 6
Industrial	32.0	361.3	+41
Unclassified	6.3	71.2	+45

* Includes private bridges

*Revised to include Alaska and Hawaii

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

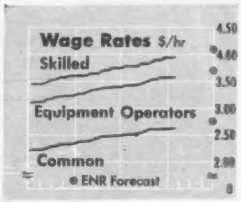
Capital . . .

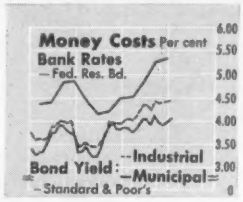
New Capital For Construction	Week of Feb. 11	Cum. 6 wks 1960	Chge '59-'60 %
	millions		
Corporate Securities..	$ 37.0	$ 203.0	−55
State and Municipal:			
All Except Housing	64.6	902.7	+59
Housing	....	0.6	−54
Federal Loans	1.4	5.8	−18
Federal Aid	....	....	....
Total Nonfederal.....	$103.1	$1,112.1	+18
Federal Appropriations:			
Projects in U. S....	....	....	....
Outside U. S.....	....	....	....
Total New Capital...	$103.1	$1,112.1	+18

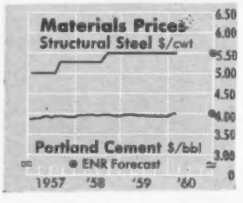
Current ENR Cost Indexes

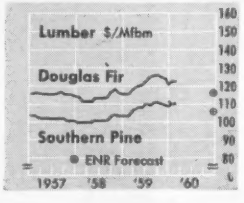
ENR INDEXES (1913=100), 20-cities' average	Week of Feb. 11 1960	% Change from Jan. 14 1960	Feb. 12 1959
Construction Cost	812.65	−0.1	+4.2
Building Cost	555.15	−0.1	+3.2

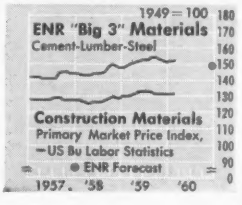
To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.





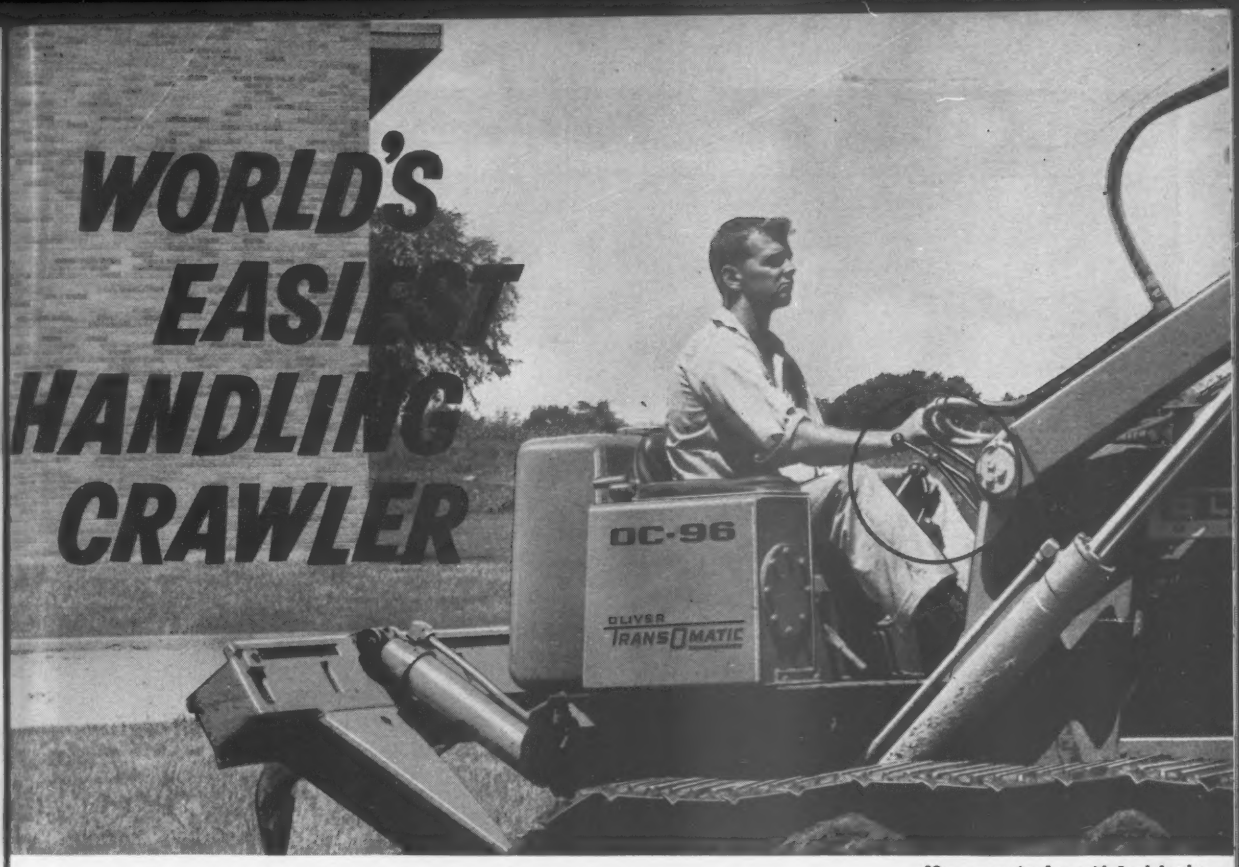






ENR COST INDEXES IN 22 CITIES, 1913=100

City	Construction Cost Feb. 1960	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost Feb. 1960	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	638.70	0	+7.5	503.16	+0.5	+6.1
Baltimore	739.72	−0.5	+4.0	552.56	−0.7	+1.2
Birmingham	652.68	+0.1	+5.0	516.59	+0.1	+4.4
Boston	830.82	+0.4	+3.2	562.49	+0.6	+4.2
Chicago	919.80	−0.1	+6.6	582.69	−0.2	+2.9
Cincinnati	814.80	+0.1	+4.9	540.30	+0.2	+4.9
Cleveland	920.49	−0.1	+3.5	553.44	−0.2	+3.4
Dallas	604.04	0	+5.4	491.30	0	+4.1
Denver	743.86	−0.4	+1.8	541.94	−0.5	+1.9
Detroit	960.02	0	+7.6	596.34	0	+3.9
Kansas City	798.46	0	+4.0	552.67	0	+3.7
Los Angeles	870.38	+0.3	+5.6	555.99	+0.4	+4.5
Minneapolis	860.16	0	+2.5	569.61	0	+2.6
New Orleans	644.18	+0.5	+4.4	514.06	+0.6	+4.1
New York	1,012.21	−0.1	+5.1	646.69	−0.2	+3.6
Philadelphia	793.09	+0.3	+0.3	579.94	+0.4	+1.7
Pittsburgh	857.54	+1	+3.7	608.70	+1.4	+2.3
St. Louis	881.99	+0.5	+4.3	581.06	+0.7	+2.3
San Francisco	853.34	0	+4.8	552.66	0	+3.3
Seattle	861.60	0	+3.8	504.18	0	+2.3
U. S.—20 Cities' avg.	**812.93**	**+0.1**	**+4.4**	**555.43**	**+0.2**	**+3.4**
Montreal	630.39	0	+4.4	458.76	0	+2.2
Toronto	675.72	+1.3	+5.7	498.02	+1.8	+3.8



62 gross engine h.p. with 1-yd. loader

Take the controls of a new Oliver Trans-O-Matic OC-96 Loader —and "let the tractor do the talking!"

Power shifting plus power steering (with three types of turns) makes the startling difference! The OC-96 is *so easy* to operate, it simply cannot be compared with older designs on this count—*or any other!*

You sit in a spacious, foam-rubber seat (offset for ideal visibility)...have full-freedom leg room in the wide, flush-deck compartment.

As for the controls, they're practically "in your lap." Levers for *power* steering, *power* reverse and *power* shift are placed directly ahead of the seat. Your arms are in "resting" position all the time. To brake or foot-steer, pedals do the job just as effortlessly.

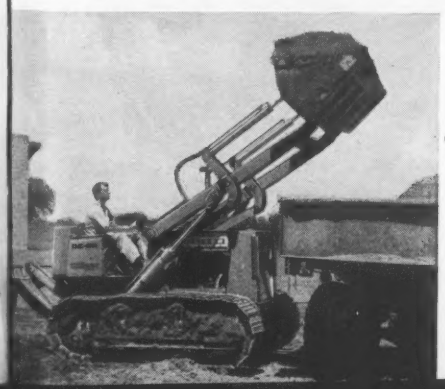
Easy operation, indeed! The *easiest* you ever had—plus.

NEW! 3 types of power turns—The only crawler its size giving you counter-rotation turns for about-faces in the tractor's own length—also spot turns and gradual turns.

NEW! Power shifting—Shift from forward to reverse instantly, on the go. No clutching, no gear-clashing with Oliver's all-hydraulic Trans-O-Matic transmission. Four speeds in high or low range—forward to 6.05 m.p.h., backward to 8.07 m.p.h.

NEW! Torque converter—The OC-96 has heaviest-duty torque converter (not automotive kind)—delivering full engine power for digging and crowding in fastest non-stalling operation. Advanced 62 gross h.p. diesel.

NEW 1-yd. loader design—See how the OC-96 is an *integral* tractor-loader minus high, hung-on parts and cross members. Loader side pedestals are actually part of the tractor for low profile, high stability, finest visibility and safety. Fast breakout, greatest dumping reach. No other its size has such rapid work cycle—is so rapid-reversing.



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Labor Feuds Over Maintenance

- **Reuther condemns efforts of Construction Industry Joint Conference to increase amount of maintenance work done by outside contractors.**
- **Schoemann threatens to quit Industrial Union Department. Feud is a setback to jurisdictional peace, but federation split is not likely.**

Construction industry efforts to sell industrial concerns on the merits of maintenance by contract emerged last week as a serious threat to labor unity.

Instead of writing a formula to settle job rivalries by arbitration, craft and industrial union leaders attending the midwinter meeting of the AFL-CIO Executive Council in Miami were drawn into a bitter battle of charges and countercharges that sets labor progress on the jurisdictional front back five years—to the time the AFL craft and CIO industrial unions agreed to merge into a single federation.

Cause of the furor was the work done by the Construction Industry Joint Conference to promote the principle of construction by contract. The issue has been the No. 1 item on the CIJC agenda and resulted last October in CIJC publication of a pamphlet called, "Maintaining Production for America" (ENR Oct. 29, 1959, p. 92). Gist of the pamphlet, aimed at management throughout the nation, is: "We build it. We can maintain it for less."

The document was passed out at the Industrial Union Department's Executive Council meeting in Miami last week by AFL-CIO Secretary-Treasurer William Schnitzler. Department President Walter Reuther and other IUD leaders took one look—and hit the ceiling.

They claimed that building trades union participation in the CIJC effort to get more maintenance work for contractors and building tradesmen is a violation of all that is sacred in AFL-CIO rules for the conduct of affiliated members.

The dispute spread quickly to the AFL-CIO Executive Council session, where rival union leaders heatedly debated the issue for two days.

It looked then as if the feud might have a number of serious consequences for the AFL-CIO. Among them, these:

- **It threatens to destroy the Miami Agreement as an instrument for the settlement, on a case by case basis, of craft-industrial union disputes** over which group should perform what construction work. That agreement, concluded in 1958, broadly allocates new construction work to the building trades unions, production and running maintenance work to the industrial unions, and work in between these two "clear areas" to either group, depending on past practices on a plant, area or industry basis.
- **It may upset the present composition of the IUD,** which embraces many of the building trades unions, by leading to the withdrawal of some or all of the craft unions.
- **The dispute is not considered severe enough to rip the AFL-CIO apart,** although one federation official said it represents the most critical rift the federation has faced so far.
- **It has put on ice for some time to come a pending proposal to establish new machinery within the AFL-CIO for settlement of inter-union disputes through arbitration.** Even without the jurisdictional outburst, however, the proposal was not ready for council action because none of the preliminary drafts have had enough support.

The new phase of the jurisdictional dispute has become a problem for mediation by AFL-CIO President George Meany, now heading a new committee seeking a solution.

Outside of the ranks of organized labor, the repercussions and implications of the dispute may slow down acceptance of CIJC's sales message.

Principal figures in last week's IUD-Building Trades dispute were Walter Reuther, president of the auto workers union, and Peter T. Schoemann, president of the plumbers union. Mr. Schoemann is a member of the IUD Executive Council, as well as a building trades' vice president and AFL-CIO vice president and Executive Council member.

When copies of the CIJC pamphlet were distributed at the IUD meeting, Mr. Reuther turned to Mr. Schoemann and asked him to leave the room during the IUD discussion of the document. Mr. Schoemann, protesting the suggestion, left and later advised that he was prepared to quit his IUD post "and not return."

Question left in the minds of many was whether the plumbers union would pull out of the IUD and, if it did, would other construction unions follow suit.

In the AFL-CIO Executive Council meeting debate the next day, Mr. Reuther, backed by David McDonald of the steelworkers union, contended that the CIJC document violates the no-raiding principles of the AFL-CIO and conflicts with the Miami Agreement, which concedes running maintenance work in factories to be the work of industrial unions.

All but one of the 17 AFL-CIO international building trades unions are affiliated with CIJC, which was formed last year by national contractor associations and the building trades unions. Likelihood of the current dispute was the reason originally given for forming CIJC around the individual unions rather than around Richard Gray's Building and Construction Trades Department. Impartial chairman of CIJC's operating committee is Harvard professor John Dunlop.

In his attack on the CIJC program, Mr. Reuther said the appeal for maintenance work by contract is a direct threat to industrial maintenance crews. The steel and auto unions each have about 200,000 maintenance men, he warned, who will strike immediately against any attempt by craft unions to take over their jobs. Such a strike by steelworkers has already occurred over the award of a maintenance contract by Fibreboard Paper Products Corp. to Fluor Maintenance, Inc.

Mr. Reuther also leveled criticism at what he called a CIJC assertion that industrial employers can hire craft union workers without the expense of hidden payroll costs of production workers and without having to maintain a maintenance staff.

He charged, too, that the International Brotherhood of Teamsters had joined the building trades unions in the preparation of the CIJC document. Under present rules, AFL-CIO unions

are barred from alliances with the teamsters at the top level.

Bricklayers' President Harry Bates was one of the first to answer the Reuther charges.

Mr. Bates said the CIJC pamphlet is, in part, a counter-measure to the industrial union practice of writing into their labor contracts clauses that restrict the contracting-out of construction work. Such clauses require industrial employers to use their own employees, under certain circumstances, for in-plant construction work.

Building trades unions contend the use of no-contracting-out clauses is spreading. These, they argue, violate the Miami Agreement because they tend to freeze new construction within a plant for handling by production unions.

Labor Board Must Decide Work Disputes, Court Says

National Labor Relations Board handling of jurisdictional disputes has been sharply criticized by the U.S. Court of Appeals for the Second Circuit.

The court ruled last month that the board's refusal to decide such disputes on their merits is a violation of the law.

While the case does not directly affect the construction industry's National Joint Board, it does suggest a way to bridge one of its biggest gaps.

If the board undertakes to hear a jurisdictional dispute under Section 10(k) because of the absence of an agreed upon procedure for voluntary settlement, the court said, it is required to determine to whom the disputed work belongs. Result, it said, should be "an affirmative board adjudication" of the disputed work assignment.

The case before the court concerned a union dispute over the right to perform lighting work on telecasts.

Present practice of the board is to determine whether the striking union is entitled to the work under a labor contract, board order or certification. If the answer is "no," the board merely orders a halt to the work stoppage. It does not decide who should get the work and the dispute is never settled. This is what happens in the usual construction case, for example, where the contractor refuses to abide by the Joint Board procedure.

Congress gave a clear mandate, the court said, to "impose a settlement" where private negotiations prove unsuccessful.

The Third and Seventh Circuits have expressed the same views in earlier cases. But the U.S. Supreme Court has never issued a definitive ruling on the issue.

Employers Prime Boycott Guns

Builders, contractors say boycott exemption would spur union membership drives, hurt public works

Two employer associations last week urged defeat of the proposed secondary boycott exemption for the construction industry. They argue that neutral and innocent contractors should not be harassed by the labor disputes of other employers or be made victims of unlawful union organizational activities.

Hearings on the proposal are scheduled for this week before a subcommittee of the House Education and Labor Committee. Early consideration of the issue was promised by some congressmen last year as part of the legislative compromise that produced the Landrum-Griffin labor law.

The National Association of Home Builders warned its members that the proposal has "drastic implications" for both union and open shop contractors and for non-union workers.

It defined a secondary boycott as "a union activity which uses a dispute with one builder or supplier to justify stopping work with another. The objective is to compel one builder, subcontractor, or supplier to stop doing business with another."

Intensive organizational campaigns in open shop areas would be one of the probable results, if secondary boycotts are legalized NAHB predicted. Such boycotts have been one of the unions' strongest and most unfair weapons" in organizational drives, it said.

Results would be to render open shop builders defenseless and to permit, through pressure on employers, the unionization of workers whether they want a union or not, NAHB predicted.

In union shop areas, NAHB said, any trade having a dispute, however insignificant, with one contractor on a job could shut down the entire project. Effect of a boycott exemption, it indicated, is to sanction an economic blockade of neutral persons.

While NAHB was urging its members to register their opposition to the proposal, the Building Contractors Association of New Jersey was voicing similar protests by telegram to the Senate and House Labor Committees.

One of the key arguments of the New Jersey association was that contractors on public works in some states necessarily work on projects with other contractors not of their own choosing. They are truly neutral, it said, and should not lose the protection the law now accords neutral employers.

(President Eisenhower has reasoned that all contractors on a common project have enough common interest to make none of them neutral in a labor dispute with any one contractor.)

Statutory provisions in New Jersey and New York, call for separate bids on the general and specialty phases of public works. One of the results is that a union contractor often finds himself working on a project alongside a nonunion contractor—the situation that frequently provokes the kind of strike that occurred in the Denver Building Trades case. Object of such a strike, BCA said, is to unionize non-union workers.

"Under these state laws," BCA said, "the union general contractors and union subcontractors are working with the nonunion subcontractors not of their own choosing and are not partners with these nonunion contractors in a joint venture as such, but are merely brought together because they are low bidders on a public project."

Clear purpose of the picketing that occurs in such a case, BCA claimed, is "to enmesh neutral employers and neutral employees in a dispute between another primary employer and a striking union." And the secondary nature of the picketing, it added, is apparent from the fact that invariably nonunion employers working together or singly are seldom picketed.

Teamsters Plan Major Campaign in South

The South will become the organizing battleground of the teamsters union for the next five years.

Meeting in Nashville, with teamster officials from four southern states earlier this month, union president James Hoffa predicted that the campaign will lead to a labor-management struggle matched for bitterness only by the long Kohler strike in Wisconsin.

Mr. Hoffa said the union would spend more money per capita for organizing in the South than in any other part of the country. Hoped for results is a doubling of southern membership in the next five years. Nonunion milk companies may be the first target.

Present plans, according to Mr. Hoffa, call for organizing by councils rather than through local unions or business agents.

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Loophole Seen in Picketing Ban

- **State court rules organizational picketing is legal even if the workers are disinterested.**
- **Decision indicates inadequate state laws may make new no-man's land provision meaningless.**

Construction industry employers doing business within California can expect no help from the state courts in seeking relief from union picketing for recognition purposes.

The California Supreme Court, in a 4 to 3 decision, has upheld the right of unions to engage in organizational picketing.

Its ruling means that a union is free to picket firms that do not qualify for the Landrum-Griffin law protection, even though the union does not represent the wishes of a majority of the workers it seeks to organize.

A strongly worded dissenting opinion said the ruling "restores blackmail picketing" to California, setting labor relations back 20 years.

The majority opinion, written by Justice Roger J. Traynor, interprets the decision as permitting labor-management relations again to be determined by free interaction of economic forces.

"An employer faced with a union demand, for recognition still has the choice of yielding to the union's demands or continuing to endure the interference with its business relations which the union's activities caused," the court declared.

"We conclude that employers are not required by law to engage in collective bargaining," the court said, "and that closed or union shop agreements and concerted activities to achieve them are lawful in this state, whether or not a majority of employees directly involved wish such agreements."

The decision supersedes a number of earlier rulings, including a San Diego Building Trades Council case in which the court held it illegal for a union to picket or exert secondary boycott pressure to get a union shop agreement unless or until the union has been designated as collective bargaining representative of the workers. It also upsets what is known as the Chavez ruling that workers cannot be compelled to join a union against their will.

Justice B. Rey Schauer, dissenting from the new decision, said:

"It is my view that the majority action inevitably will set back, for we do not know how long or how repercussively, the cause of law-guided and peacefully negotiated settlements of labor disputes in California industry. I think that by the majority's action workmen will suffer, the public will suffer, unions and union leaders who prefer self government under law will suffer. Only those union leaders who eschew responsibility under law—who have no regard for the general welfare and freedom of the individual—will prosper."

The ruling was made in a dispute between Petri Cleaners, Inc. and a local of the laundry drivers union. The court refused to grant the union a preliminary injunction to compel Petri to bargain with it and it refused to grant Petri's request for an injunction against the picketing.

The decision has two results of timely interest to small employers in California and other states that have no labor relations laws comparable to the Taft-Hartley Act, as amended by the Landrum-Griffin law. These laws prevent blackmail picketing by protecting workers from being forced into unions that do not represent them and by severely restricting union picketing for organizational purposes.

- The California decision pinpoints the seriousness of this question: Should state law or federal law be applied in interstate commerce cases that state agencies are now allowed to handle when the National Labor Relations Board declines to take jurisdiction?
- And the decision puts small California employers, whether in intrastate or interstate commerce, into a no-man's land of labor law.

In the San Diego Building Trades Council case, for example, the California courts took jurisdiction when the NLRB refused to act. But they followed federal law. The State Supreme Court ruled that economic pressure by unions to compel employers to recognize uncertified unions and to enter into union shop agreements was "unlawful under the federal statute, and for that reason not privileged under the California law."

But the U.S. Supreme Court said the state court was "under no compulsion" to follow federal law.

If the new California approach is followed by other states that have no restrictions on organizational picketing, even small employers in interstate commerce will not get the benefit of picketing restrictions imposed by the Landrum-Griffin law should they fail to meet NLRB jurisdictional standards.

Joint Plan May Avoid Strikes

A new collective bargaining technique is being tried by labor and management in Buffalo, N. Y., in an effort to minimize the possibility of crippling strikes over contract disputes.

The plan sets up for the first time ground rules for the conduct of negotiations this spring between the Construction Industry Employers Association and seven of the building trades—teamsters, laborers, bricklayers, carpenters, operating engineers, cement masons and iron workers.

Key to the plan is an early start on negotiations and their completion a month before present contracts expire.

In previous negotiating years, strikes by some of the crafts have tied up work on many projects.

This year, a joint committee of CIEA and the AFL-CIO Building and Construction Trades Council worked out a timetable for 1960 negotiations.

They have agreed on May 1 as the target date for completion of negotiations. This is one month before the current pacts expire.

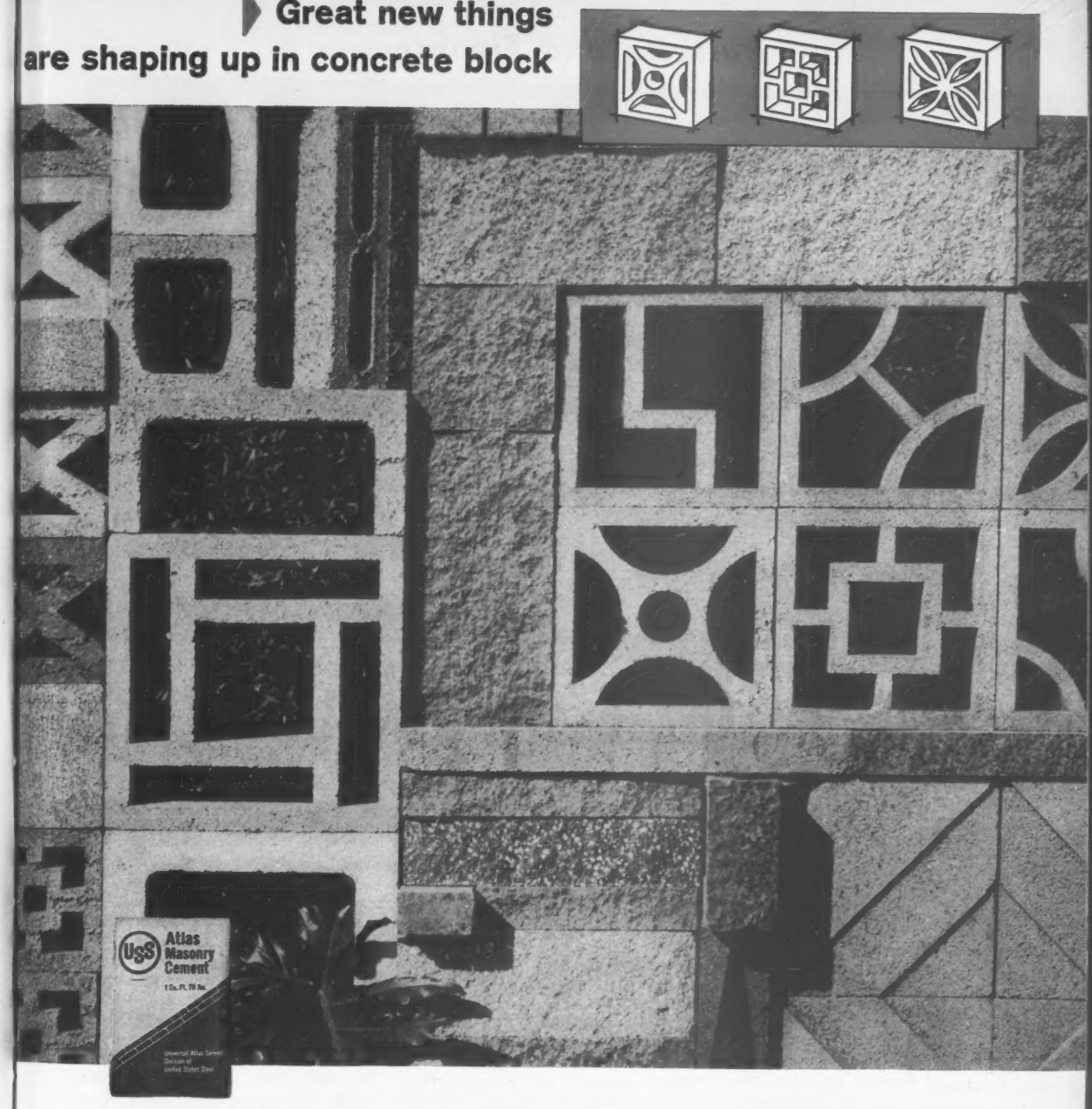
The schedule calls for contract talks between negotiators for each craft and each employer committee to commence later in Febraury. Each group is scheduled to conduct a minimum of two bargaining sessions this month, two more in March and four in April.

On April 29, the chairman of each union and employer committee is scheduled to report to the joint CIEA-Building Trades committee on progress —or lack of it—in the negotiations.

If accord is not reached by May 1, the daily bargaining sessions will be held through May 13, when another report meeting will be convened.

The pace of negotiations will be stepped up even more between May 13 and May 20. If there is no agreement by May 20, notice will be given that a strike is possible on June 1.

Great new things are shaping up in concrete block



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whose range of patterns, shapes and textures is suggested in this block grouping by Architects D. Wallace Benton and Donald G. Park of Los Angeles. To lay up these striking new concrete block, Atlas Masonry Cement continues to be the preferred cementing material for mortar. It provides a smooth, workable mortar, assures a stronger bond, gives weathertight joints that are uniform in color. And Atlas Masonry Cement complies fully with ASTM and Federal Specifications. For information write: Universal Atlas Cement, Dept. M, 100 Park Avenue, New York 17, N. Y.

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General sessions bring all key men together for discussion of company goals.

How and Why Fruin-Colnon Runs

By Robert J. Stinson

"The construction business is always surrounded by pitfalls that must be avoided or you're done. An annual meeting of a company's supervisory personnel is one way of dodging some of them."

That's one executive's appraisal of the management meetings convened annually by Fruin-Colnon Contracting Co. of St. Louis. Substance of the thought is echoed by Fruin-Colnon men from superintendents on up to the chairman and president, 42-year-old John P. Soult.

The company's most recent session, the third such held, convened in St. Louis last month.

As conceived and conducted by the company, these meetings are not rambling, casual social gatherings. They are carefully planned brainstorming, brain-picking meetings. They provide new ideas for both staff and line employees of Fruin-Colnon and help to plug any operational holes that may have shown up in the previous year.

Tone of both the general and workshop sessions this year is illustrated by the opening remarks of the chairman of one of the workshop groups:

"Okay, before we start, keep two things in mind. This is not a gripe session. It is not a bull session. It's an idea session. We want to come up with some sound, useful ideas for Fruin-Colnon management. What's good for the company will be good for us."

That statement by James B. McGrath, the project manager of the $13-million Plaza Apartments, St. Louis' downtown urban redevelopment project, contains more truth than poetry.

About 165 persons attended the 1960 conference, most of them stockholders in Fruin-Colnon. (There are 300 key permanent employees in Fruin-Colnon, and 139 of them own company stock.) And whether they own one share or 100 shares, their ownership heightens interest in company growth, as well as in personal growth.

Their pride of ownership and participation is readily apparent during the two management meeting days, at the stockholders meeting and an evening banquet and dance on the third day.

The meeting days are hard work. They start at 8 a.m. and end at 5 p.m. There are only three interruptions in each day—two 15-minute coffee breaks and a 75-minute buffet lunch.

At the end of the sessions, everyone knows he has put in a day's work. Those taking part in the formal portions of the program obviously have carefully prepared their presentations on the subjects they chose or were assigned. Then they must withstand a barrage of questions from the floor by men, who, the day before, may have faced and solved in the field or a distant office the very problem just discussed.

Discussion may well reveal a better solution. If so, the fact is granted. The information is noted by all present and recorded in the files of management. Later the problem and its solution will be distributed to the field or division offices where the same type of obstacle may be encountered.

Although these general sessions have an important place in the over-all organization of the conference, they are not the sole method of procedure. The conference is tailored to fit Fruin-Colnon's organizational setup.

The latest meeting was divided al-

Associate Editor Bob Stinson *didn't have to be asked twice when the word came from Fruin-Colnon that an ENR man would be welcome at their annual management meeting. He knew how important such meetings can be in the construction industry, how rare they are (see also p. 25), and how hard it is to wangle an invitation to one.*

Workshops round out annual management meeting by bringing problems into the open.

an Annual Management Meeting

most evenly between general sessions for all supervisory personnel and workshop sessions for various types of supervisory men—project managers, construction supervisors, superintendents.

But within these two main groupings, there is no fixed pattern for the type of session to be held, or the grouping of participants.

A general session may consist of a series of formal talks on different topics; or it may consist of a couple of four- or five-man panel discussions.

The workshop sessions also take different forms. They may be attended by several men from various divisions, or they may involve a group of men from only one division.

On the first day, seven workshop sessions mixed personnel from the heavy construction, building and industrial, and engineering divisions.

The discussion topics were aimed at bringing out problems common to any type of construction.

With several workshops running simultaneously, participants can have their choice. Those interested in, say, the roles of the engineer and superintendent, join that workshop group. Others interested in the methods and problems of setting up field operations attend another workshop.

On the second day, workshop meetings were scheduled on a divisional basis. Building and industrial division had its morning-long meeting, engineering division had its meeting, the heavy division had its own, and the Western and Indiana divisions had their separate programs.

All subjects are handled by the men most closely involved with them.

Responsibility for content and format of the divisional workshop meeting rests with division managers, who are also vice presidents of the corporation.

They may elect to follow a relatively stylized program with several specific subjects handled by as many individuals. Or the manager may decide on a rapid-fire brain-storming, problem-exposing session. In such sessions, the ideas are snapped out quickly with discussion on each sharply limited. But the best thoughts or the most serious problems expressed are presented later to management for execution or solution, whichever may be required.

The Fruin-Colnon management conference is elaborate. It requires extensive planning and organization and a generous cash outlay.

Including the annual banquet for the 300 employees and their wives, the out-of-pocket expenditure is in the vicinity of $10,000. That is exclusive of any production time lost by those away from a desk or the site. It includes transportation costs from the Western division office at San Francisco, the Indiana division office at Indianapolis and from the various jobsites wherever located. Hotel and meal expenses of the personnel brought in from jobs outside of St. Louis are paid by the company.

The company, however, considers this outlay one of its most important costs of doing business.

Says a top executive:

"We pay for communication every month: phones, telegrams, a bi-monthly house organ, bulletins to key people when we win a contract. Why not pay for an annual conference? It's mass communication with a personal touch."

That need for the personal touch ranks high in importance with the officers and workers, many of whom have been with the company for as long as 49 years.

Says F. C. Ahrens, vice president and manager of the engineering division:

"Once we stayed close to St. Louis. We knew each other and saw each other almost every day. Rarely was a

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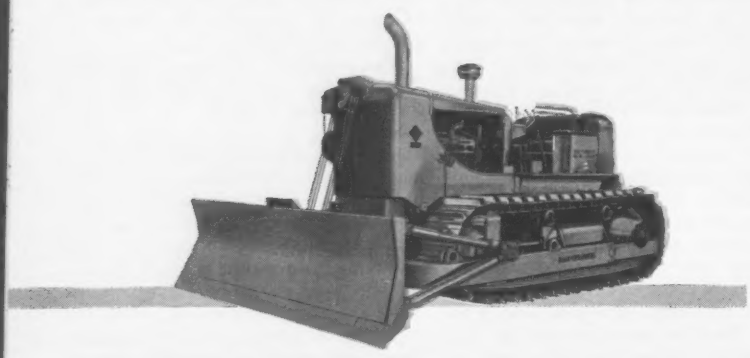

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job more than a day from home base. Now we all find that, by gosh, we don't know everyone working for us. We grew big rather fast, and that was the price."

Hearty agreement comes from Mr. Soult. "To advance, a company has to work as a team. But you've got to identify the players on it by something more than a payroll number," he says.

The conference supplies the personal contact as well as new ideas needed to lick problems both old and new. But in addition, everyone learns something about the "hard sell."

It's a fact of business sometimes forgotten by, or even unknown to, the engineers, supervisors and superintendents in the field. Private contracts have to be "sold" and it isn't always the contractor with the lowest figure that gets the job.

All are reminded that the volume of work written up didn't jump from $10 million in 1950 to over $70 million in 1959 without some sales work. They are told of work under way having a total value of $89.5 million and a backlog on Jan. 1 of $60 million.

"But to get that volume we first had to hear about it," says the vice president of sales. "Big ears on a job and a fast call to the sales department can get us in the door first. Usually the first one in comes up with the competitive negotiated contract," he says.

Cheered by its past, Fruin-Colnon is looking to its future, and preparing for it.

The key men are told what is planned for the year ahead, what is in the works and how it will affect the company. The business secrets are few and the facts are many. It's a combination that helps individuals working as a team to steer a course of benefit to the company. And with Fruin-Colnon, as with all contractors, that means more contracts, larger volume, bigger profits.

What Fruin-Colnon's key people talked about . . .

FIRST MEETING DAY

Morning (general sessions)
- Job Finances:
  - Financial planning on job
  - Financial control on job
  - Completing ahead of schedule
- Fruin-Colnon's IBM System (movie)
- Safety is simple
- Steps in assembling the low and profitable bid (panel)

Afternoon (workshop sessions)
- Administration of a joint venture
- Managing and accounting for the field office
- Setting up field operations
- When, where and how to purchase and subcontract
- When, where and how to obtain the right piece of equipment and plant
- Creating a team out of your work force
- The roles of the engineer and the superintendent

Cooperation (general session)

SECOND DAY

Morning
- Importance of the pre-job conference (general session-panel)
- Divisional workshop sessions (simultaneous)
- Building & Industrial Division (topics covered successively)
  - Protecting Fruin-Colnon interests
  - Field accounting problems
  - How to conduct a job safety meeting
  - How to become more competitive
- Engineering Division (topics covered successively)
  - The engineering department
  - Construction
  - Sales
  - Duties of a project engineer—engineering
  - Duties of a project engineer—construction
  - The job critique
  - Firm competitive prices on preliminary drawings and outline specifications
  - New techniques—design
  - New techniques—construction
  - Field test and inspections
- Heavy Division
  - Brainstorming session
- Western and Indiana Divisions and Fruin-Colnon International
  - Comparison of construction practices and problems in different states and overseas

Afternoon (general session)
- Movie of most recently completed major job
- Personnel policies and hiring practices
- Performance on schedule
- The challenge in 1960 (panel discussion)
- Selling our services
- Adjournment

State Court Rules Against Levitt on Discrimination

Homebuilder William Levitt lost out in his attempt to bar Negroes from his 15,000- to 16,000-unit Levittown III in Burlington, N. J. The state's Supreme Court ruled last week that if a private builder gets public assistance on financing or mortgages, he cannot restrict sales to any racial or religious group.

The court, in a 6-0 decision, held that New Jersey's antidiscrimination law "plainly includes" housing sold with mortgages insured by the Federal Housing Administration. It upheld the Appellate Division of Superior Court, which last July dismissed an appeal by Levitt & Sons.

Ira Goldman, attorney for the company, said the decision "involves serious questions of Constitutional law" and probably will be appealed to federal courts.

The contest started in 1958 when three Negroes complained to the state's Division Against Discrimination (ENR July 3, 1958, p. 82).

Since the tract was started in that year, 3,000 families have bought and occupied houses. Plans call for completion of the tract within four or five years.

The company plans to start two more developments this year; one in central New Jersey between New Brunswick and South Amboy; the other in Maryland (ENR Dec. 17, 1959, p. 238).

Equipment Prices Going Higher

Some construction equipment manufacturers have increased their prices, several more will follow suit Mar. 1.

But as predicted by ENR, the size of the boosts is moderate—2% to 3% (ENR Feb. 4, p. 21).

Thew Shovel Co. last week raised prices on nearly its entire line of construction equipment.

J. I. Case Co., effective Mar. 1, will boost price tags on its crawler tractors and tractor shovels by 2% to 3%. Several other equipment makers are planning to lift prices on the same date.

Some other manufacturers are playing their hands close to their vest.

Thew prices went up 2% on the 2-yd front end loader and 3% on the 1¾-yd model. Increases of 3% are effective on power shovels of ⅜, ½, 1¾ and 2 yd shovels. Truck cranes are up 3% over the whole line of 10-ton to 80-ton models.

Five large equipment manufacturers and seven smaller ones are planning price boosts on Mar. 1, a major distributor in the Midwest tells ENR. The companies include two making power shovels, two making concrete batching equipment for ready-mix concrete and one making transit-mix trucks. The other seven manufacturers produce smaller units.

Because of the impending increases, the distributor is using a new order form. In effect it says, "No prices quoted at this time shall be considered firm. Selling prices will be those in effect at the time of delivery."

Some manufacturers aren't announcing price boosts now. Apparently they want to wait and see what the steel supply and price picture will be. They are also scanning orders closely to judge what the potential market is and what it might be in the face of increased prices. (Last year, the construction equipment market was strong, with new orders establishing a new record. See below for details.)

Asked if prices on his line of tractors and scrapers were scheduled for an increase by the manufacturer, a New York City distributor replied, "it would be silly to raise prices when you aren't selling." This same distributor has been critical of the increases in his line late in 1958, when some items went up about 8%.

So far this year, few equipment manufacturers have changed their prices. International-Harvester Co. upped the tag 1.9% on its gear drive TD-25 crawler tractor early in January. There have been no increases "yet" on other I-H items, ENR sources report.

Oliver Corp. increased crawler tractor prices by 3% in mid-January.

Machinery Orders Top Record

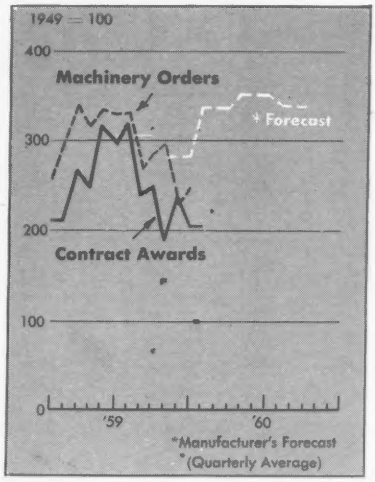
Contractors boosted their orders for construction machinery during December.

The dollar value of new business going to construction and mining equipment manufacturers was 7% above November and equaled the December 1958 high.

The New Orders Index value for December was 244, based on 1959 average monthly volume as 100. This compares to November's index value of 227.

December's strength in equipment orders lifted the 1959 average of the index to a new high of 293—25% above 1958 and 16% above the record set in 1956.

The Equipment Orders Index moved counter to the December decline in ENR's Construction Contract Award Index. It dropped to 203, based on 1949=100. Thus equipment orders apparently took until December to catch up with the November spurt in new business going to contractors. November machinery orders fell below the rising trend.



The Equipment Orders Index is computed by the McGraw-Hill Economics Department from reports by a sample of construction and mining equipment manufacturers.

County Group Tightening Subdivision Road Standards

One of Cincinnati's suburban growth areas—Clermont County— is preparing land development regulations strongly opposed by homebuilders.

But the newly formed Clermont Planning Commission, charged with their preparation and enforcement, says the rules will make housing developments "better than ever."

Prime target for improvement is roads, says A. E. Suro, the commission's engineer. He reports the county "is now faced with rebuilding some 800 miles of roads at a cost of $4 million, and each year 10% more mileage is added in new subdivisions."

To prevent a proportionate rise in county road maintenance costs, the commission will establish new standards for grading and drainage, and prohibit gravel roads.

Deadend streets without turn-around areas will also be barred. Enforcement of new regulations, however, may be challenged. Developers' attorneys are already talking of a court test.

South Jersey Transit Line Gets Consultants' Backing

A proposed rapid transit line that would extend from Philadelphia 12 miles southeast into New Jersey has been approved by consulting engineers and submitted for study to the transportation committee of the Delaware River Port Authority.

The commuter line would cost $44.6 million, $31.6 million for construction and $13 million for equipment that would include 92 air-conditioned passenger cars.

The proposal calls for a grade-separated line throughout, with tracks either elevated or depressed. It would use the Locust St. subway station in Philadelphia, an existing high-speed line over the Benjamin Franklin Bridge to Camden and the right-of-way of the Pennsylvania-Reading Seashore Lines to Kirkwood, N. J.

The report on the rapid transit proposal, prepared by Simpson & Curtin of Philadelphia, estimates that 17.4 million riders would use the line in 1962.

Engineering approval for the line comes shortly after formation of a nonprofit corporation to operate railroad commuter lines within Philadelphia (ENR Jan. 28, p. 48). The over-all program is aimed at solving the urban transportation problem in the city and in the surrounding metropolitan area, including south Jersey.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: March 2, 1960

Municipal Parking Facility

CITY OF BINGHAMTON
DIVISION A
NOTICE TO BIDDERS

1. Sealed proposals for performing all work in connection with the Building, Plumbing, Ventilating, and Electrical wiring and Electrical Heating, Contracts I, II, III and IV, respectively are hereby invited and will be received by the Board of Contract and Supply until 10:30 o'clock, Eastern Standard Time, on March 2, 1960, in the Council Chambers, City Hall, Binghamton, New York and there publicly opened and read immediately thereafter.
2. The work will consist of providing all labor, materials, equipment and incidentals and performing all operations required for the construction, complete and ready for operation, of the Parking Facility, including all Foundations, Plumbing, Ventilation, Electrical and all related work.
3. Drawings, specifications, bidding and contract documents may be examined at the office of the Engineer, Gage & Martinson, 145 East 49th Street, New York 17, New York, or at the office of the City Engineer at City Hall and obtained from the latter at a deposit of $40.00 per set. Full refund will be made to actual bidders for return of each set in good condition within two weeks after closing date for receipt of bids.
4. Each bid must be accompanied by a Bid Security in the form of a bid Bond or a certified check payable at sight to the Treasurer of the City of Binghamton in an amount not less than Five Percent (5%) of the amount of the total bid. Such Bid Security will be returned to all except the three lowest formal bidders within five (5) days after the formal opening of bids, and the remaining Bid Securities will be returned within two (2) days after the Owner and the accepted bidder have executed the contract, or if no contract has been executed, within thirty (30) days after the date of opening of bids, upon demand of Bidder at any time thereafter, so long as he has not been notified of acceptance of his bid. If the Bidder to whom the contract is awarded does not execute the contract and furnish the required bond within fifteen (15) days after receipt of notice of award, the aforesaid Bid Security shall be paid to the City Treasurer as liquidated damages.
5. The Owner reserves the right to reject any or all bids, to waive any informality in bids received and to accept that bid which in its judgment best serves the interest of the City.

BOARD OF CONTRACT AND SUPPLY
By: Richard Zeboris, Secretary.

February 4, 1960.

Bids: February 25, 1960

Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., until 11:00 A.M. Thursday, February 25th, 1960, as follows:

For Throgs Neck Bridge Contract No. TN-10E, Bronx and Queens Approaches Viaduct Roadway Slabs. The bid must be accompanied by a deposit in the amount of $100,000.00.

Plans, specifications and contract documents may be purchased at the office of the Authority for $20.00, which will not be refunded.

Bids: February 23, 1960

Sluice Gate and Stop Shutters

CONTRACT 467

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time on Tuesday, February 23, 1960, for Contract 467, for furnishing, testing, and delivering one 6-foot by 15-foot broome type sluice gate, three 6-foot by 15-foot stop shutters, and one stop shutter lifter, together with their appurtenances, complete in every respect and ready for installation in the Intake Works of the West Delaware tunnel, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of twenty-five thousand dollars ($25,000.00), for the proper execution of the Contract.

Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in the Secretary's office, Room 1312, at the above address, upon application in person or by mail, by depositing the sum of $5.00 for each pamphlet. Within 30 days following the award of contract or rejection of bids the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the Contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars apply at the office of the Chief Engineer at the above address.

ARTHUR C. FORD, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; BETTY COHEN, Acting Secretary.

Bids: February 24, 1960

Narrows Bridge—Brooklyn Tower & Staten Island Tower

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. Wednesday, February 24, 1960

For Narrows Bridge Contract No. NB-2B, Brooklyn Tower. The bid must be accompanied by a deposit in the amount of $250,000.

and

For Narrows Bridge Contract No. NB-2S, Staten Island Tower. The bid must be accompanied by a deposit in the amount of $250,000.

Bidders may submit bids for either one or both of the above contracts.

Plans, specifications and contract documents may be purchased at the office of the Authority for $25.00, which will not be refunded.

District of Columbia—Building Construction—Dept. of Buildings & Grounds, D. C., February 1, 1960. CONSTRUCTION AND COMPLETION OF ADDITION TO MAURY ELEMENTARY SCHOOL, CONSTITUTION AVENUE BETWEEN 12TH PLACE AND 13TH STREET, N.E., WASHINGTON, D. C. (INVITATION NO. C-6088-B/1 READV.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Rm. 404, 499 Pennsylvania Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer. (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 2:00 PM, EST, March 1, 1960, in Room 424, 499 Penn. Ave., N.W.

Bids: February 29, 1960

Feeder Road Program

NOTICE:
New Postponed Bid Date: February 29, 1960
Original Bid Date: January 14*, 1960

MINISTRY OF PUBLIC WORKS
REPUBLIC OF EL SALVADOR
BIDS: JANUARY 14*, 1960
NOTICE TO CONTRACTORS

The Ministry of Public Works of the Republic of El Salvador advises that on January 14,* 1960, bids will be received for the construction of a major portion of the proposed Feeder Road Program of the country. The Specifications, Plans and Contract Documents will be for sale in El Salvador on December 9, 1959.

All Contractors interested in taking part in this bidding are requested to obtain the necessary Documents, Plans and Specifications from the Office of the Proveedor Especifico de Obras Publicas, Edificio Morazan, 8ª C. P., San Salvador, El Salvador, C. A. All requests must be accompanied by a certified check in the amount of One Hundred Sixty Dollars which will not be returned.

MINISTRY OF PUBLIC WORKS
REPUBLIC OF EL SALVADOR,
C. A.

*New Postponed Bid Date: February 29, 1960

Bids: See Advertisement

Contracts BP-502.284; LGA-310.009 and BP-190.004

THE PORT OF NEW YORK AUTHORITY

Sealed proposals for the following work will be received at the Office of the Chief Engineer, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on date indicated, at which time said proposals will be opened and read in Room 1108.

Contract BP-502.284—Brooklyn-Port Authority Piers—Borings at Existing Pier 26—No deposit required—Bids will be received until 2:30 P.M. on Tuesday, March 1, 1960.

Contract LGA-310.009—La Guardia Airport—Rehabilitation of Runway 4-22 and Associated Taxiways—Paving and Utilities—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Tuesday, March 8, 1960.

Contract BP-190.004—Brooklyn-Port Authority Piers—Piers Nos. 6 & 7—Paving and Utilities—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Tuesday, March 22, 1960.

Contract documents may be seen at the office of the Assistant Chief Engineer for Design, Room 1115, 111 Eighth Avenue, New York 11, N. Y. Documents will be furnished upon receipt of the above deposit (each set including one copy of the Contract Drawings) for not more than three sets to any one company. Additional sets will be furnished upon payment of an amount for each set equal to the deposit indicated above, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

February 18, 1960

OFFICIAL PROPOSALS

Bids: November 5, 1960.

Hillah-Kifl Drainage Project Machinery and Pumphouse

REPUBLIC OF IRAQ
ECONOMIC PLANNING BOARD
MINISTRY OF AGRICULTURE

Tenders are invited by the Ministry of Agriculture for the construction of the pumphouse and the delivery and installation of the machinery for the Kifl Drainage Pumping station.

The capacity of the pumping station will be 3 pumps of 2 cubic metre per second each.

The work will consist of two contracts:—Contract No. 1-1959, Kifl Drainage Pumping station: Machinery, Contract No. 2—1959, Kifl Drainage Pumping station: Pumphouse. Offers can be submitted for one contract only or for both contracts.

The Contract Documents and Instructions to Tenders may be inspected at the following places:

(a) The Directorate-General of Irrigation of the Ministry of Agriculture.
(b) The offices of the Netherlands Engineering Consultants "NEDECO", 48 Javastraat, The Hague, Holland.
(c) The Embassies of the Republic of Iraq in London, Washington, Bonn and Moscow, or at the Legations of the Republic of Iraq in Brussels Rome and Vienna.

Firms desiring to tender may obtain two complete sets of each contract from the Directorate General of Irrigation or at the Offices of Nedeco at the Haque upon payment of twenty Iraqi Dinars or the equivalent thereof. (Ten Iraqi Dinars for two sets of one contract). This amount will not be refunded.

Tenders must be submitted to the Ministry of Agriculture, Directorate General of Irrigation, in sealed envelopes endorsed clearly with the words:

"TENDER FOR THE BUILDING OF THE DRAINAGE PUMPING STATION ON KIFL, HILLAH-KIFL DRAINAGE PROJECT"

or "TENDER FOR THE MACHINERY OF THE DRAINAGE PUMPING STATION KIFL, HILLAH-KFL DRAINAGE PROJECT"

and will be received up to 12 a. m. of the day of 11.5.1960

Each tender must be accompanied by a cash deposit equal to 5% of the Contractor's Bid or a Bank's Guarantee from an approved Bank in Iraq. Enclosed in a separate envelope a letter of capacity, method of procedure and articles of association must be submitted at the same time. Tenders not submitted within the time specified or not accompanied by a receipt of the deposit, or a letter of guarantee and the certificate of membership of Chamber of Commerce (if the Tenderer resides in a Liwa in Iraq where a Chamber of Commerce exists) shall be neglected.

Tenders will be accepted only from firms or persons who have had previous experience in works of a similar nature and magnitude.

The Board does not bind itself to accept the lowest or any tender.

MINISTER OF AGRICULTURE.

Bids: March 3, 1960.

For the Construction of Maintenance Building—Whirlpool State Park in Niagara Falls, Niagara County, New York

POWER AUTHORITY OF THE STATE OF NEW YORK
ADVERTISEMENT FOR PROPOSALS
SPECIFICATION NO. 409.5
NIAGARA CONTRACT NO. N 17

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for the construction of Maintenance Building—Whirlpool State Park, located in Niagara Falls, Niagara County, New York, until 10:30 A.M. Eastern Standard Time on the 3rd day of March, 1960, at the Authority's Office, 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are:

(a) Maintenance Building

A one story building having a floor area of approximately 13,550 square feet and an interior volume of approximately 223,800 cubic feet. The building is of steel frame construction with concrete block walls supported or reinforced concrete walls and piers extended to bedrock, with a steel edged precast concrete plank roof covered by roof insulation and built up roofing. The work also includes: all mechanical equipment and piping for complete plumbing, heating and ventilating systems with provision for future expansion; and complete electrical systems. The work further includes all necessary painting.

(b) Improvement of Grounds

Estimated Quantities

9,100 cubic yards Excavation
590 tons Asphalt Concrete Pavement
250 linear feet Reinforced Concrete Culvert Pipe
810 linear feet Galvanized Steel Conduit

All work shall be completed on or before November 15, 1960.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents, and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's New York Office and the Authority's Field Office, 2640 Main Street, Niagara Falls, New York, and in the offices of the Engineer, Clarke and Rapuano, 330 Third Avenue, New York 22, New York, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum price bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: February 25, 1960

Soil Explorations and Foundations Investigations

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Eastern Standard Time on February 25, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON LOWER MANHATTAN EXPRESSWAY, LOWER MANHATTAN EXPRESSWAY TO MANHATTAN BRIDGE APPROACH, F.A.I. ROUTE 513-1-2, NEW PROJECT NO. I-78-1(5)1, ITEM 273, NEW YORK COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-153.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) Mr. M. E. Goul, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island.
(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $6,650.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders."

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

Bids: March 22, 1960

G.M.&O. Railroad Bridge Revision and Grade Raise

Sealed bids for the revision and extension of G.M.&O. Railroad Bridge AO-2667 over Cahokia Creek Diversion Channel, raise of grade of earth embankments, and related work, will be received at the office of the Chief Engineer of the Gulf, Mobile and Ohio Railroad, 104 St. Francis Street, Mobile, Alabama, until 1:00 P.M. Tuesday, March 22, 1960, at which time and place all bids will be publicly opened and read. The work is located approximately 7. miles south of Alton, Illinois. Principal construction quantities are: 40,000 c.y. of embankment, 6,600 c.y. sub ballast, 2,000 Lin. Ft. steel H piling, 523 c.y. reinforced concrete, 60 tons new structural steel and castings, raise five existing steel spans.

The work is subject to inspection and approval by both the Railroad and the U. S. Corps of Engineers, St. Louis District.

Two sets of plans and contract documents may be obtained from the Chief Engineer of the Railroad upon payment of $30.00 by check or P. O. Money Order. No refund will be made for plans or contract documents returned.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5276) will be received at Ephrata, Washington, until 10 a.m., Pacific Standard Time, March 24, 1960, for furnishing labor and materials for Hope Valley Pumping Plant and Discharge Line W78.8 and Frenchman Hills Pumping Plant and Discharge Lines W61 and W61C, West Canal Laterals, Block 80, Columbia Basin Project, Washington. Location near Othello, Washington. Principal items are 36,090 cu. yds. excavation; 3,805 cu. yds. concrete; 1,478 lin. ft. concrete pressure pipe; Lump Sum, constructing pumping plant superstructure; 1,685 lin. ft. concrete cylinder pipe; Lump Sum, furnishing and installing 78½-inch and 61-inch diameter steel discharge pipes; and other work. Completion time 470 days. For particulars, address Bureau of Reclamation, P. O. Box 937, Boise, Idaho; P. O. Box 368, Ephrata, Washington; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

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The advertising rate is $39.20 per in. for all adv. appearing on other than a contract basis. Frequency rates quoted on request.

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Send detailed resume and photo to

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2300 Chester Ave. Cleveland 1, Ohio

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Civil
Hydraulic
Structural

Permanent openings at grades:

GS-5, $4490 per annum
GS-7, $5430 per annum
GS-9, $6285 per annum
GS-11, $7510 per annum

for duty with Engineering Division
Rock Island, Illinois

Appointments will be made under Federal Civil Service procedures.

Only U. S. Citizens are eligible for employment

Mail Resume to

District Engineer
U. S. Army Engineer District, Rock Island
Clock Tower Building,
Rock Island, Illinois

FOREIGN EMPLOYMENT

DISTRICT INDUSTRIAL ENGINEER

BS or MS Degree Industrial or Mechanical Engineering with post graduate studies production control, tool design, material handling, industrial psychology, etc. Practical industrial experience required with at least 2 years supervisory capacity in fabricating industry. Experience as machinist or tool maker desirable.

Excellent opportunity large copper company Chile, South America. 2 year contract with transportation both ways and salary while traveling paid by company. In reply give complete details.

P-3651, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CIVIL ENGINEER

City of Brookfield, Wisconsin is expanding its engineering department and will employ a graduate civil engineer with some background in municipal or consulting engineering. Must be available for employment prior to March 15, 1960. Submit resume of experience and qualifications to

CITY ENGINEER
2000 North Calhoun Road, Brookfield, Wis.

CIVIL ENGINEER

Permanent new position for graduate civil engineer in the salary range of $511 to $588 a month (plus longevity pay). Candidates with outstanding qualifications may be hired above the minimum. Vacation, sick leave, dual pension program, and other fringe benefits. Must be U.S. citizen and possess an EIT certificate. Some related experience desired to work in design and construction of sewer, water, street, sidewalks, and curbs. Travel expenses paid on invitation and moving expenses paid for selected candidate. Personnel Dept., 404 City-County Bldg., Madison 9, Wisconsin.

MARKET DEVELOPMENT MAN

About thirty years old, preferably with degree in chemistry or chemical engineering and some experience in the field of concrete technology (portland cement), paint technology, or chemical specialties.

Excellent company benefits and working conditions.

Send complete resume to:

Mr. Paul S. Morton, Jr.
Personnel Manager
THIOKOL CHEMICAL CORPORATION
780 North Clinton Avenue
Trenton 7, New Jersey

ARCHITECTURAL ENGINEER

Leading construction firm in Southeastern New England desires graduate architect or structural engineer with a minimum of 8 years experience.

Must have a thorough knowledge of industrial and commercial building design, drafting ability, and able to do quantity take-off.

Must be familiar with construction procedures as well as current developments in economic building practices.

Registration not necessary. Reply with resume, references, and salary requirements.

P-3555, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

DRAFTING ROOM

STEEL CHECKER

Structural and Miscellaneous Steel Checker.
Minimum 5 Years Experience.
Opportunity for Advancement in Growing Concern for Right Man. Top Salary.
Rhode Island Area—Send Complete Resume to:
P. O. Box 1211 PROVIDENCE, R. I.

CONSTRUCTION MANAGER

With heavy experience background in dams, tunnels and hydroelectric projects. Work domestic or foreign. Salary commensurate with experience. Write:

P-3097, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ASCE STAFF

Civil engineering graduate, age 25-30, member of ASCE, for responsible position on Society staff. Duties will include servicing and assisting local groups of members and students. Good personality and ability to communicate through correspondence and personal contact are essential. Some travel. Salary dependent upon qualifications. Send complete resume to William H. Wisely, Executive Secretary, American Society of Civil Engineers, 33 W. 39th St., New York 18, N. Y.

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Enjoy large profits—Distribute "T-33" the nation's finest blacktop sealer. "T-33" gives you these selling aids: Best by lab tests; Meets and exceeds specs; Factory guaranteed; Competitive prices; Exclusive territories. For further details, address PLASTIC SEALER CORP., BOX 3011, UNIVERSITY STATION, COLUMBUS 10, OHIO.

ENGINEER for GRAIN COMPANY

Engineering Department of large grain company requires graduate engineer, C.E. or M.E., for permanent position with some experience in construction and design of grain elevators and knowledge of grain handling equipment. Location is New York City. Submit detailed experience record and list of references to

P-3707, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

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Sales Engineer: To represent expanding prestressed concrete plant in Southeastern Wisconsin area. Structural design background in building field considered helpful. Send complete resume and salary requirements to P-3492, Engineering News-Record.

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Sales Engineer—Civil or equivalent with good sales experience for a large precast wall panel plant. Mail resume to: Midwest Concrete Industries, West Des Moines, Iowa.

Sanitary Engineer with at least two years' experience in design and development of sewerage and waste treatment systems or sewage treatment equipment sales to prepare bids and proposals and to handle technical liaison. Send full details. Yeomans Brothers Company, 1999 N. Ruby Street, Melrose Park, Illinois, Fillmore 4-9600.

Civil Engineer: Registered with capable background and client connections, interested in association with party ready to form a consulting business in Maryland. P-3603, Engineering News-Record.

Construction Superintendent, Engineering Background essential, estimating experience helpful. General Contracting organization operating in Middle Atlantic States and dealing primarily in public buildings. Complete resume requested covering education, experience, salary requirements and when available. P-3731, Engineering News-Record.

(Continued on opposite page)

• POSITIONS VACANT

Engineers—Professional engineers to fill positions as Senior Sanitary Engineer with New York State agencies in Albany and other up-state cities. A Senior Sanitary Engineer takes charge of district environmental sanitation or is staff specialist in a major phase of public health engineering. Requires P.E. license, engineering degree and progressively responsible experience with two years or more in sanitary or public health engineering. Salary $7818 to $9408 in five annual increases. For detailed information write to Recruitment Unit, New York State Dept. Civil Service, Box 21B, The State Campus, Albany 1, N. Y.

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Draftsman—experienced structural steel detailer and checker. Permanent position with established consulting firm. Fringe benefits. Submit resume of experience, references, and salary expected. Samborn, Stekette and Associates, 1214 Cherry Street, Toledo 4, Ohio, or 4913 Van Epps Road, Cleveland, Ohio.

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Soils Engineer—MCE, P. E. Age 28 experienced in testing, analysis, design and construction. Resume on request. PW-3568, Engineering News-Record.

Project Manager, B.S.C.E., 16 yrs. exp., hvy. Const., Hwys., flood control, earthwork, bldgs., Govt. contracts, field & office. E. Eiswirth, P. O. Box 48 Clayton 5, Mo.

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Civil Engineer, Surveyor, Computer, Chief of party, twenty years Highways, Sewers, Waterlines, Right of way and realty surveys. New Jersey registration. Will relocate. PW-3614, Engineering News-Record.

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Executive—Contract Manager, Attorney, Administrator, 15 yrs Legal—Construction Experience, Govt Contracts, Claims, Employed. PW-3599, Engineering News-Record.

Structural Engr.—BSCE—30—6 yrs. experience in bridge design. Interested in bridge or diversified structural design with consulting firm, Eastern U. S. PW-3677, Engineering News-Record.

Grad. C.E. 36, varied office, field, research lab. and tech. transl. (Rus. Fr. Germ.) experience in U.S. & overseas. Good references. Local or foreign. PW-3728, Engineering News-Record.

Architect, American, in Europe, licensed N. Y., N. J. 25 years experience, six years in Europe as Chief Architect, seeks new position. A. Hofmann, 5 Vieux College, Geneva, Switz.

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Construction Executive-C.E., experience covers office and field management, estimating, cost analysis, coordinating, expediting, in Highway and Bridge Construction. State position, location, salary. PW-3721, Engineering News-Record.

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Project Manager, Gen'l Supt., CE Degree 20 years experience. Proven record, cost minded, bidding to completion, Hi-ways, Sewers, Water, Commercial, Industrial, Sub-divn, Shopping center development, Available at once, Min. Salary $11,000. Prefer Ohio, Indiana, Illinois location. PW-3723, Engineering News-Record.

Superintendent-Estimator-Engineer, CE P.E. L.S. (N. J.) experienced public works, utilities, bridges, paving, desires position general contractor or municipality, N. J. PW-3734, Engineering News-Record.

Retired P.E. C.E. 53, Highly Productive, Ample Capital, wants association with established engineering organization. PW-3689, Engineering News-Record.

Attorney-Engineer B.S.C.E. L.L.B. Age 30 Recent Law Graduate. 6 years design, specification and report writing. P.O. Box 7144, Tulsa, Oklahoma.

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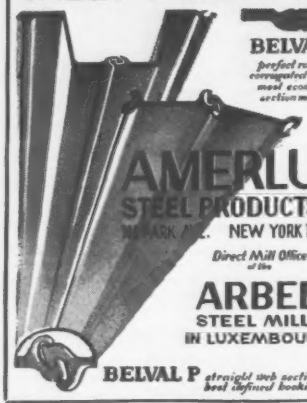

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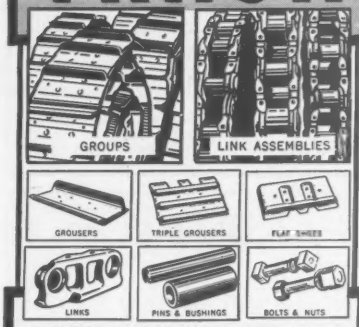

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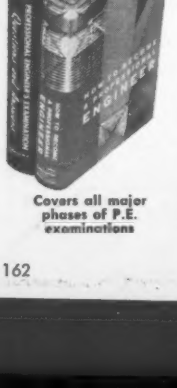

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Ways to Steel Progress

THE FINE EXPERIENCE of the California Division of Highways with high-strength steels has also led to the discovery of some possible obstacles to their rapid widespread utilization. Removal of the obstacles appears to rest mainly on the efforts of the steel producers, although consumers could probably do much to help.

One snag, A. L. Elliott, California bridge engineer, points out (p. 52), is the difficulty of getting welding rods to match the strength of the newer steels. Development of suitable welding rods is therefore, a necessity.

Another hitch seems to be the lack of sufficient knowledge of the buckling characteristics of thin webs of high-strength steel. This is a research project on which steel producers and consumers could cooperate to their mutual benefit.

Still another block is the "confusion" over weldability. Some structural steels that satisfy the requirements of a specific ASTM specification are weldable; others are not. Steel producers and consumers would find it profitable to work together to eliminate the possibility of a non-weldable steel being used where a weldable one is required.

Finally, consideration should be given to Mr. Elliott's recommendation on classification of steel into strength grades. He urges that structural steels be grouped into perhaps three classes to prevent confusion due to development of innumerable steels differing only slightly in strength.

With these barriers out of the way, progress in use of high-strength structural steels should be rapid.

Time Will Tell

THE HIGHWAY PROGRAM INVESTIGATION, just beginning under the direction of a special subcommittee of the House Public Works Committee, can be a boon rather than a boondoggle, a way to win the public to enthusiastic support rather than a witch hunt to develop fodder for political speeches.

These constructive possibilities are emphasized because there has been a tendency to prejudge the investigation in derogative terms and with fear for its consequences. So far real justification for such fears is lacking.

Time will tell, of course, but it is better to wait and see. And, in the meantime, it is well to acknowledge that Congress has a right and a duty to know how the program that it set up is doing—and to admit that improvements are always possible.

It must also be admitted—on his record and by his specific statements—that Minnesota Representative John A. Blatnik, chairman of the subcommittee, cannot be pictured as a man likely to conduct a purposeless or unfair investigation (ENR Feb. 11, p. 22). He has said that he wants to keep Congress informed, sustain public confidence in the highway program and uphold its integrity. No public official, engineer, contractor or manufacturer connected in any way with the program can disagree with these objectives.

Neither boondoggle nor witch hunt can result if these objectives are kept clearly in mind. Particularly important is the objective of integrity of the highway program, which is the key to sustaining public confidence in it. Moreover, it should not be overlooked that integrity involves not only—or even principally—the honesty of individuals connected with the program, but the adequacy of the planning and design to provide the public with the kind and the quality of roads that it needs at a cost that is reasonable and fair.

There have been too many reckless statements, in Congress and out, about waste and extravagance. Too many of these have had no more basis in fact than that the early preliminary estimate of $27.6 billion had to be revised to $39.5 billion on more careful review of the kind and quality and mileage of superhighways that the public needs and expects. No waste can be attributed to such a revision, and if the planning should prove to have been extravagant in a few instances, there is ample time to change it. In this connection the new standards just issued by the Bureau of Public Roads afford a useful safeguard. They also well illustrate one facet of what is meant by integrity of the program.

By hewing to constructive objectives, by operating with fairness, by eschewing fanfare and by seeking with sincerity to assure that the nation will have the kind of highway system it needs for growth in the years ahead, the investigating committee can perform a notable public service. By muffing or degrading its opportunity it can also cause great damage. The fork in the road is just ahead. May the committee choose the right one.

Better Management

IT IS ENCOURAGING to be able to highlight evidence that the more sophisticated management thinking and methods prevalent among large manufacturing companies are beginning to permeate construction. In last week's issue the story on Daniel, Mann, Johnson & Mendenhall, a relatively young architect-engineer firm, told how it recognized and corrected managerial deficiencies that were stunting its efficiency as it grew. And in this issue there is the story of Fruin-Colnon's productive annual management meeting and the report of other top contracting companies who are experimenting with similar idea-exchange meetings.

Management, the art of getting work done through others, is an area in which construction needs more experts. The instances cited above are in line with these needs.

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